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A NEW CHAOBORID GNAT, *CHAOBORUS LACUSTRIS* SP. NOV. (CHAOBORIDÆ; DIPTERA)

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For several years complaints have been received at the University from the vicinity of Clear Lake, Lake County, California, concerning the pest of gnats which inundates the country near the lake throughout the summer months. These insects are non-biting but are so numerous that they make life almost unbearable by flying into the eyes and mouth, contaminating food and filling store windows inches deep with their dead bodies if white lights are exposed in the evening. Nearly all the householders and campers in the vicinity of the lake have been forced to use red shaded lights for illumination to prevent being swamped with these insects.

An examination in 1925 proved them to be chaoborids of the subgenus *Sayomyia* and they were provisionally determined as *Chaoborus (Sayomyia) astictopus* Dyar and Shannon. A careful study of new material proves them to be a distinct species, the description of which follows:

Chaoborus (Sayomyia) lacustris Freeborn, sp. nov.

Male. Head: Pale brown with vestiture of straw-colored hairs. Tori large, occupying nearly whole width of face, pale brown, apically excavated and bearing plumose antennæ; antennæ translucent except at whorls, hairs of which are golden yellow. Clypeus flattened, prominent, densely covered with golden hairs, pale brown and darker at margins. Proboscis and palpi transparent with brown markings. Eyes dark red.

Thorax: Prothoracic lobes large but not contiguous, anterior half rich brown, posterior white. Posterior pronotum white with brown stripe along dorsal margin and slight infuscation on posterior margin. Mesonotum white shading to cream with rich brown markings bordered by lines of darker brown arranged as follows: two median stripes tapering posteriorly starting at anterior border and ending at antescutellar space, two subdorsal stripes tapering posteriorly start-

ing on either side of median stripes at point midway of disc and ending at scutellum; faint triangular spot with base at scutellum and apex pointing between two median stripes; pale circular spot indefinitely defined between anterior end of each subdorsal stripe and anterior margin. Scutellum white at center with brown markings at each side, vestiture of golden hairs. Postscutellum dark brown with a median, V-shaped, white cleft at the anterior margin. Pleuræ pale cream with numerous brown markings, most conspicuous of which is that covering lower three-fourths of the sternopleurite. Prothoracic sclerites densely haired, others smooth, bare except four upper mesepimerals. Halteres entirely white. Legs densely hairy, creamy white with brown markings; forelegs more heavily pigmented than others; femora with subapical brown bands and brown spots at hair insertions, tibiæ with subbasal and subapical brown bands and brown spots at hair insertions, basitarsus as long as next two segments, each segment with apical brown ring growing fainter on the distal segments. Claws simple. Wing veins clothed with narrow, hair-like scales, anterior margin clothed with narrow, appressed scales, posterior margin with two lengths of lanceolate scales, one short and other longer than greatest distance between anal vein and hind margin. Slight brownish stains on wing membrane at base of R2, at fork of R2+3, at r-m and m-cu. Marginal distance between terminations of R1 and Sc almost twice that between R1 and R2. Fork of R2 and R3 distinctly distad of fork of M1+2 and M3+4. R2 slightly down-curved at margin. Crossveins r-m and m-cu forming continuous line. Cu2 becomes evanescent at margin, but appears to incline forward and run parallel with the margin. Tillyard's "Cu2" is fully as prominent as the so-called Cu2 paralleling Cu2 to point near margin, anal vein prominent, down-curved near margin and paralleled by prominent fold, another anal parallels hind margin.

Abdomen: First segment translucent white, wider than long; second to seventh longer than wide, translucent white, lateral margins of tergite and sternite dark brown, the coloring becoming progressively narrower as the mid-dorsum and mid-sternum is approached, giving appearance of lateral triangles; seventh largely brown; eighth funnel-shaped, one-fourth length of seventh and rotated 180 degrees.

Terminalia: Gonostyles (side pieces) slender at base expanding to tip, stained with brown on outer half; a subapical, rounded lobe bears three and sometimes four stout spines, the inner face from base to lobe heavily studded with bent hairs not markedly different in size from spines of lobe; dististyles (claspers) bent, pale at base, brown at tip, which is very slightly expanded, no appendage (claw). Paraprocts (tenth sternites) curving around base of gonostyles with only terminal points parallel to the latter, pale at base, deeply pigmented at tip which is cleft in two parts so that they resemble inverted high-heeled cow-puncher's boots. In balsam mounts two

paraprocts are straightened and take V-shaped position with terminal ends pointing laterally and caudally. Length of male 5 mm.

Female. Similar in coloration to male except that pigmentation is more pronounced and deeper brown; triangle in antescutellar space not always distinct; first abdominal tergite with dark pigmentation, dark markings of venter limited to scattered spots; tarsal rings more distinct than in male, last segment all brown; stained areas on wings more pronounced and numerous, all forks and most marginal terminations of veins with stained area. Palpi with basal segments swollen, the terminal one as long as combined length of two segments preceding, slender, annulated. Abdominal segments wider than long. Claws simple, Length, 4 mm.

Type, male, California Academy of Sciences, No. 1873, Lakeport, Lake County, California, July 19, 1925.

This species falls near *C. punctipennis* Say and *C. astictopus* D. and S. It differs from both in having very pronounced markings on the mesonotum and in the form of the paraprocts. The abdominal markings in the female agree closely with those of *astictopus* and the chaetotaxy of the gonostyle is very similar to that of *punctipennis*.

LABOPS BURMEISTERI STAL

In the March, 1926, number of the Canadian Entomologist Dr. Knight requests information regarding the occurrence of *Labops burmeisteri* in New York State. With the consent of Mr. Evans I retained the specimen of this species which I determined in 1909 and a reëxamination of this specimen shows it to be the true *burmeisteri* as determined by Dr. Knight. At the time I made this determination I had a second specimen from the Adirondack Mountains of New York, which passed through my hands for study, so the New York determination can be depended upon. I have not time now to look up the Alaskan record and it is possible that may refer to the form later described as *tumidifrons* Kngt.

In my material of *hirtus* Kngt. one specimen from New Mexico has the tibiæ altogether black with the long tibial hairs and male claspers of *hirtus*, so the color of the tibiæ cannot be relied upon in separating these forms. *Labops hesperius* Uhl. as restricted by Knight is still unknown to me.—E. P. Van Duzee.

A NEW SPECIES OF SCENOPINIDÆ FROM CALIFORNIA (DIPTERA)

BY M. C. VAN DUZEE
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Pseudatrachia albocincta Van Duzee, new species

Male. Length, 6 mm.; of wing, 4 mm. Head, thorax, scutellum and abdomen black, somewhat granulate, nearly bare; apical segment of abdomen, hypopygial appendages and a space above fore coxæ with a few pale hairs; palpi yellowish white; vertex and upper orbits shining black; antennæ brown, tip of second joint more yellow; a small spot back of humeri and another back of wing yellow, these spots connected by a narrow white line, abdomen with bronze reflections above; second, third and fourth segments each with a conspicuous white elongate spot on the hind margin at the sides, these spots connected by a narrow white line on the venter and nearly so on the dorsum.

Coxæ, femora, tibiæ and tarsi yellow; middle and hind femora with a brown stripe below, the latter brown at tip above; tips of tibiæ a little darkened; tarsi slightly brownish; hairs on legs minute, white; knobs of halteres white, petiole brown. Wings hyaline, veins yellowish. Described from one male.

Type, male, No. 1874, Mus. Calif. Acad. Sci., taken by E. P. Van Duzee, May 23, 1920, at **Bradley, Monterey County, California.**

Table of North American Species

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– Head black 3
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3. Legs yellow 4
– Legs black or brown 5
4. Second and third abdominal segments white on posterior margin both above and below (California) ..... *albocincta* new species
– Abdomen without white margins to the segments (New Mexico; California) ..... *unicolor* Coquillett
5. Dorsum of thorax and the femora with long mixed white and black hair; hind margins of abdominal segments 2-5 white (Arizona) ..... *pilosa* Coquillett
– Hair on thorax and femora short; length, 8 mm.; abdomen rather long and slender (Mexico) ..... *longurio* Loew

SOME NEW SPECIES OF MACROSIPHUM FROM BRITISH COLUMBIA (HOMOPTERA, APHIDIDÆ)

BY ALICE P. MACDOUGALL
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The following species of Macrosiphum are described from collections made in British Columbia during the summers of 1923-25 inclusive. All measurements are in millimeters and whenever possible are an average of a number of specimens. Length of body is measured from the vertex to the tip of cauda. The width given is that of the widest part of the abdomen. Owing to the large area covered and the great distance between various collecting points, it was impossible to take a complete series in every case. However, these descriptions will, it is hoped, serve as a basis for further study of some interesting species from a comparatively new territory and aid in their identification by workers in these districts.

1. **Macrosiphum audeni** Macdougall, n. sp.

Fig. I

This species occurs in dense colonies on the upper sides of the leaves of *Nymphaea polysepalum,* clustering toward the petiole. The specimens from which the descriptions were made were collected by Mr. K. F. Auden in the summer of 1924 at Merritt, British Columbia, after whom the species is named. It was taken also by Mr. G. Spencer near Victoria, British Columbia, in 1925, and by the author the same summer at Lakelse Lake in the northern part of the province. It is thought to be comparatively rare as many plants have been worked over in these and other localities which were all quite uninfested. Its distribution, however, as indicated by the above localities in which it was taken, is fairly general for the province.

Apterous viviparous female

General appearance: Color pale green, head and upper portion of abdomen slightly darker; antennæ light except segment VI and apex of V, which are dusky; coxæ and femora pale; tarsi and tip of tibia dusky; cauda pale; cornicles pale, except tips which are dusky; eyes dark red; body long and fairly slender; cornicles not reaching to tips of cauda, reticulated at tip where dusky, distinctly wider at base;

cauda long, irregularly ensiform; 2-4 sensoria on ant. seg. III. Beak fairly short, not reaching below second pair of coxæ. Antennæ much longer than body.

Measurements: Body—length 3.5, width 1.4; ant. segs.—III .8, IV .7, V .5, VI .19+1.2; corn.—.9; cauda—.4; hind tarsi—.19.

Alate viviparous female

General appearance: Color as above: antennæ dusky except first two segments and extreme base of third; eyes dark red; legs pale except distal tips of tibia and femora and all of tarsi, which are dusky; basal half of cornicles pale, rest dusky; cauda clear. Body long and fairly slender, except when distended with embryos; where dusky cornicles are distinctly reticulated, long, slender; cauda ensiform, fairly hairy; basal two-thirds of ant. seg. III with row of 12-18 sensoria. Antennæ slightly longer than body.

Measurements: Body—length 3.5, width 1.6; ant. segs.—III .75, IV .72, V .65, VI .2-1.2; corn.—.8; caud—.3; hind tarsi—.17; fore wing—length 4.2, width 1.45; hind wing—length 2.02, width .69.

All collections were made as recounted above on the following dates: Merritt, July 25; Victoria, British Columbia, August 8; Lakelse Lake, July 28.

Type slides are deposited in the National Collection, Ottawa. Paratypes in the United States National Collection, Washington, and in the author's collection.

This species is closely related to *Macrosiphum aquilegia* Theo.

2. **Macrosiphum bisensoriatum** Macdougall, n. sp.

Fig. II

Found in abundance on the under side of leaves of *Ribes lacustre* during the summer months. No alternate host is known; migrants appear at frequent intervals during the summer. This species can readily be distinguished from *Myzus ribis* Linn. by the larger size and the fact that when disturbed they are inclined to fall from the leaf.

Apterous viviparous female

General appearance: Color dark green, head slightly lighter than the rest of the body; antennæ pale except I and II, which are concolorous with body, distal quarter of V, and all of VI, which are dusky; flange of cornicle dusky, rest clear; cauda abruptly ensiform, clear; beak reaching almost to third pair of coxæ; last segment of

leg shading to brown; tips of tibia and all of tarsi dark brown, rest pale; head, cauda, ant. seg. III, and tibia prominently hairy. Two small sensoria on proximal half of ant. seg. III. Tip of cornicle distinctly reticulated, rest imbricated. Body slender, graceful; antennæ much longer than body; cornicles reaching to tip of cauda.

Measurements: Body—length 3.38, width 1.7; ant. segs.—III 9.5, IV .8, V .65, VI 16+1.15; cornicles—1.1; cauda—.42; hind tarsi—1.5.

Alate viviparous female

General appearance: Thorax very dark, rest as above; insect noticeably smaller than above. Coloring of antennal segments as follows: I and II, concolorous with body, rest of antennæ dusky; on dusky portion of seg. III is a row of 9 sensoria; near tip of V, one large one is found, and the usual number occur at base of spur of VI. Eyes red; beak quite long, clear, except last segment which is uniformly dusky; coxæ and basal two-thirds of femora pale, shading to the light brown of the rest of the femora; tibia light brown except tip, which is dark; tarsi dark brown; cornicles pale at base, shading to dusky flange, slightly constricted near tip; this part imbricated; cauda clear; wing veins distinct, dark brown; stigma rather pale. Antennæ much longer than body.

Measurements: Body—length 2.8, width 1.3; antennal segments—III .86, IV .7, V .6, VI .17-.9; cornicles—.8; cauda—.32; hind tarsi—1.5; fore wing—length 3.7, width 1.3; hind wing—length 2, width .6.

This species differs from *Macrosiphum lactucæ* Pass in having fewer sensoria in both forms and minor differences in color and size. It was collected at Boundary Bay, British Columbia, at intervals, through July and August, 1924.

Type slides are in the National Museum, Ottawa. Paratypes in the National Museum, Washington, and in the author's collection.

3. **Macrosiphum fuscicornis** Macdougall, n. sp.

Fig. III

Found in colonies with *Aphis œnotheræ Œst.* on stems and leaf buds of *Epilobium angustifolium,* the dark green color of this form contrasting with the purple of the smaller one. It has been taken in different parts of the province during the summer. Alatæ are comparatively rare, only having been found in June and the latter part of August.

Apterous viviparous female

General appearance: Dark olive-green body; antennæ brown throughout, darkening somewhat in VI, much longer than body; eyes red; legs uniformly dark except base of femora, which is pale; cornicles brown except at base, reaching beyond the tip of cauda, broader at base and slightly constricted near tip; cauda long, irregularly ensiform, light brown.

Measurements: Body—length 3.18, width 1.6; ant. segs.—III 1.03, IV .94, V .83, VI .2+1.12; cornicles 1.4; cauda .5; hind tarsi .18.

Alate viviparous female

General appearance: Color approximately as above; thorax slightly darker than other parts of the body; antennæ and cornicles strikingly long; eyes dark red; first two antennal segments dusky, III dusky except extreme base which is pale, IV getting paler, V and VI quite light. A more or less regular row of sensoria along edge of III. Coxæ and basal half of femora pale, rest of legs dusky; cornicles dusky, slightly paler immediately below flange; cauda pale; wing veins normal, stigma pale brown.

Measurements: Body—length 2.6, width .89; ant. segs.—III .81, IV .8, V .72, VI 15-.8; cornicles—.9; cauda—.32; hind tarsi—1.7; fore wing—length 3.7, width 1.38.

This species has been collected at Jerico Beach near Vancouver, British Columbia, on August 24, 1924, and Merritt, British Columbia, June 29, 1924. It was observed in other parts of the province during the same summer. It is most closely related to *Macrosiphum fragariellum* Theo., but the cornicles are tapering and there is no indication of a swelling.

Type slides in Canadian National Collection, Ottawa. Paratype slides in United States National Museum, Washington, and in the author's collection.

4. **Macrosiphum nigromaculosum** Macdougall, n. sp.

Fig. IV

This very colorful Aphis is found, so far as the writer knows, only in the semi-arid valleys of the lower Cascades. It is clustered in masses along the stems of *Rosa nutkana,* seldom spreading to the buds or leaves. Although collected from June to August, no adult or larval migrants were taken.

Apterous viviparous female

General appearance: Body bright red, fading to pink; cervicum

black, abdomen marked with three more or less regular black bands; appendages black, body broadly ovate with cornicles projecting outward at right angles giving the insect a most peculiar appearance. Specimens in balsam appear as follows: head and abdomen dark with lighter thorax, antennal segments pale except ends of V and VI, which are dusky. Eyes very dark red; base of femora pale, rest of leg light brown, except tips of tibia and femora and all seven tarsi, which are dark; cornicles uniformly black, very broad at base, tapering gradually to the usual-sized flanged tip, reticulated throughout; cauda irregularly ensiform, shading from pale at base to dusky at tip; beak light brown except tip which is very dark, reaching to second pair of coxæ; antennæ, tibia and cauda prominently hairy. No sensoria on antennal segment III, but a very large one near tip of V and the usual group at the base of spur of VI, scarcely as long as the body. In cleared specimens the black pigment spots seem to be scattered rather unevenly in those parts of the body which appear banded.

Measurements: Body—length 3.7, width 1.9; ant. segs.—III .9, IV .51, V .51, VI .15-.74; cornicles—.7; cauda—.38; hind tarsi—.2.

Collections of this species were made in Bootahnie Valley, June 28, 1924, and in Merritt on July 10 of the same year. During these months and August, no alatæ were observed in either locality. Readily distinguished from other species occurring on *Rosa* by color, shape and habits.

Type slides deposited in the Canadian National Collection, Ottawa. Paratypes in United States National Museum, Washington, and in author's collection.

5. **Macrosiphum pyrifoliæ** Macdougall, n. sp.

Fig. V

This species is fairly common in the vicinity of Merritt, British Columbia, on the leaves of *Pyrus occidentalis* during the summer. Although the sexes have not been found it is thought to spend the complete season on this host. Migrants occur regularly, a few of them being always present in a colony.

Apterous viviparous female

General appearance: Dusky brown in color, head slightly darker than the rest of the body; antennal segments V, VI and tips of III, IV, dark brown, I and II concolorous with body; rest clear; eyes red; legs pale except tarsi and tips of tibiæ, which are dusky; cornicles long, reaching just below tip of cauda, and pale, except distal third, which is dusky; cauda clear; body long, of average width;

embryos show distinctly; dusky portion of cornicles distinctly reticulated. Row of 14-17 sensoria on basal three-quarters of antennal segment III. Cauda typically ensiform. Beak reaching to third pair of coxæ; last segment dusky.

Measurements: Body—length 3.4, width 1.4; ant. segs.—III .9, IV .75, V .7, VI .2-.9; cornicles 1.1; cauda—14; hind tarsi—1.6.

Alate viviparous female

General appearance: Much darker than the apterous form; body narrower and antennæ longer; body dark green-brown; cauda, basal half of femora, proximal part of antennal joint III, all pale; cornicles dusky, uniformly colored; wider than in apteræ; only the tip distinctly reticulated, barely reaching to tip of cauda; legs and antennæ covered with fairly long, capitate hairs. Antennal joint III with 18-24 irregularly placed sensoria, more or less clustered in center.

Measurements: Body—length 3.1, width 1.01; ant. segs.—III 1.1, IV 8.5, V 7.4, VI .19-1.2; cornicles—1.1; cauda—.43; hind tarsi—.19; fore wing—length 4.55, width 1.6; hind wing—length 2.8, width .86.

Collected May 27, 1924, in Merritt, British Columbia, by Mr. K. F. Auden, and in Tulameen on June 15 of the same year by the author. It was observed at other times in this locality. Nearest to *Macrosiphum ulmariæ* Schrank, although it resembles this species only remotely.

Type slides in Canadian National Collection, Ottawa. Paratypes in the United States National Museum, Washington.

6. **Macrosiphum subviride** Macdougall, n. sp.

Fig. VI

This species is found on the stems and leaves of *Aster alpinus* which grows on the eastern slopes of the Cascade Mountains and in the Rockies. As it does not colonize, it is very difficult to detect on the pubescent surface of the host. Alatæ are found continuously throughout the summer months. Early in August, however, the insects entirely disappear; the winter host is unknown. Transfer experiments were made with *Aster occidentalis,* but were found to be completely unsuccessful.

Apterous viviparous female

General appearance: Color delicate green, approximating that of the hairs of the host; antennal segments I and II pale, III and IV pale with dusky tips, V shading to dusky at tip, VI dusky; legs pale except tip of tibia and all of tarsi, which are black; cornicle slightly

constricted a short way from tip, this narrow part dusky and reticulated; cauda clear, ensiform; eyes red. Antennal segment III with an irregular row of 8-9 sensoria.

Measurements: Body—length 3.1, width 1.05; ant. segs.—III .89, IV .68, V .59, VI .19-1.28; cornicles—.8; cauda—.38; hind tarsi—.12.

Alate viviparous female

General appearance: Same general color and shape as above; thoracic region slightly greener than the rest of the body; antennæ very dark except segments I, II, and base of III, which are pale and form a striking contrast; coxæ and proximal portion of femora pale, rest light brown, except tarsi and distal sixth of tibia which are dark as antennæ. Wing veins regular, dark, radius slightly clouded, stigma dusky. Proximal half of cornicle light, rest dark, reticulated, slightly constricted near tip; cauda clear, broadly ensiform, hairs fairly noticeable. 20-25 sensoria on ant. seg. III.

Measurements: Body—length 2.6, width .8; ant. segs.—III .91; IV .88, V .8, VI .2-1.45; cornicles—.82; cauda—.31; hind tarsi—1.1; fore wing—length 4.65, width 1.7; hind wing—length 2.4, width .9.

First collected in Bootahnie Valley, June 27, 1925, and then at intervals until August 2 of the same year. This species differs in minor points from *M. circumflexa* Buck, *M. campanulæ* Kalt. and *M. solanifoliæ* Ash.

Type slides in Canadian National Collection, Ottawa. Paratypes in United States National Museum, Washington, and in the author's collection.

Explanation of Figures

Fig. I. *a*, cornicle of apterræ; *b*, segment III of antennæ of apteræ; *c*, cornicle of alatæ; *d*, antennal segment III of alatæ; *e*, fore wing; *f*, cauda of apteræ; *g*, cauda of alatæ.

Fig. II. *a*, cornicle of apteræ; *b*, antennal segment III of apteræ; *c*, cornicle of alatæ; *d*, antennal segment III of alatæ; *e*, cauda of apteræ; *f*, cauda of alatæ; *g*, fore wing.

Fig. III. *a*, cornicle of apteræ; *b*, antennal segment III of apteræ; *c*, cornicle of alatæ; *d*, antennal segment III of alatæ; *e*, cauda of apteræ; *f*, cauda of alatæ; *g*, fore wing.

Fig. IV. *a*, cornicle of apteræ; *b*, cauda of apteræ.

Fig. V. *a*, cornicle of apteræ; *b*, antennal segment III of apteræ; *c*, cornicle of alatæ; *d*, antennal segment III of alatæ; *e*, cauda of apteræ; *f*, cauda of alatæ; *g*, fore wing.

Fig. VI. *a*, cornicle of apteræ; *b*, antennal segment III of apteræ; *c*, cornicle of alatæ; *d*, antennal segment III of alatæ; *e*, cauda of apteræ; *f*, cauda of alatæ; *g*, fore wing.

Fig. I.

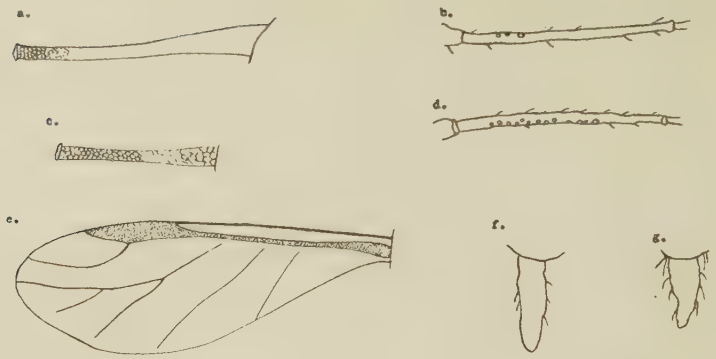


Fig. II.

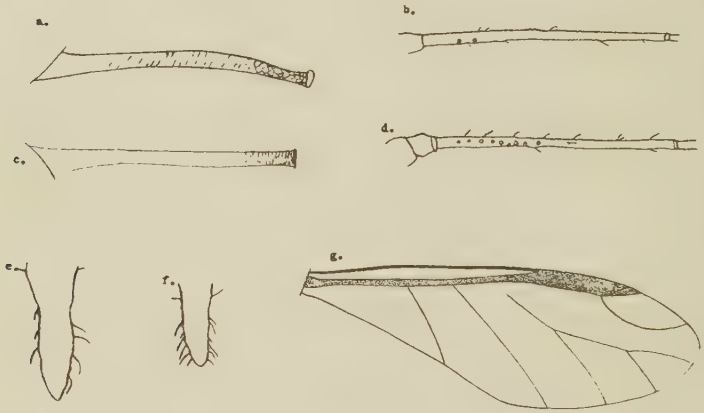


Fig. III.

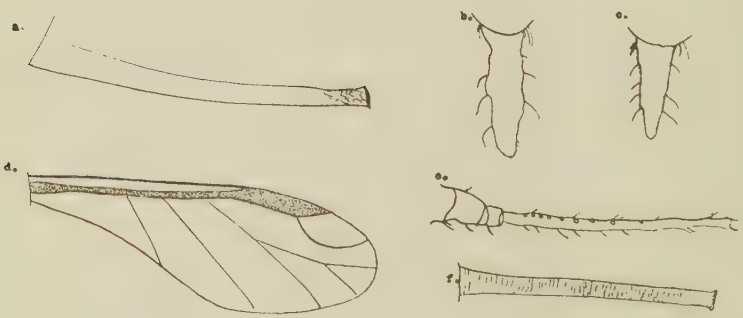


Fig. IV

Fig. V

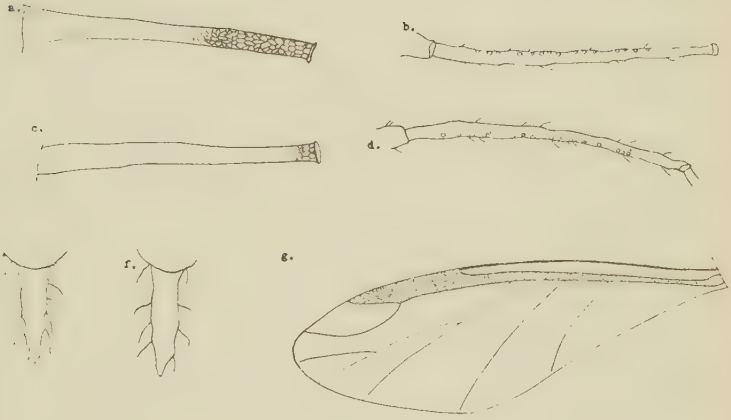
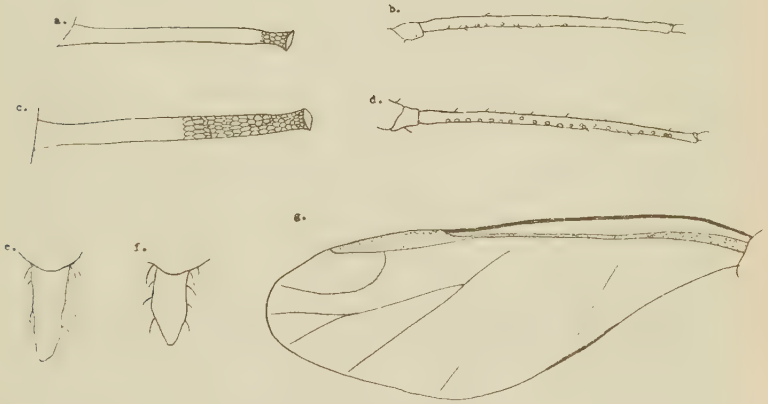


Fig. VI.



NOTES ON THE GENUS STENOPELMATUS WITH DESCRIPTION OF A NEW SPECIES (ORTHOPTERA)

BY ALONZO C. DAVIS AND LESLIE M. SMITH

In the course of some anatomical work which the writers were doing with two undoubtedly distinct species of Stenopelmatus, it became necessary to know what species were being dealt with. One of the species was of large size, with the head, thorax, and legs usually light testaceous or somewhat fuscus. This species was dominant along the Berkeley hills and rarely extended its range into the low lying coastal shelf upon which the cities of Oakland and Berkeley are situated. In the hills this species was found only on grassy slopes, overhung by an outcropping of rock which had strewn the slope with weathered fragments. Under these rocks this species constructs its burrows.

The second species was much smaller, with the head, thorax and legs usually rufo-testaceous. This species was dominant on the low, flat belt bordering the San Francisco Bay in the neighborhood of Oakland. It was seldom taken in the hills, where the large species was fairly abundant. Throughout the residence section of the city this small species is fairly common. It burrows in the loose soil in backyard gardens and constructs tunnels beneath boxes, boards, etc., which are closely pressed to the ground. When living in the hills, it occurs in the same type of habitat as does the larger species.

It was difficult to induce the large species to mate in the laboratory, but when this was done, it was found that the female pursues the male for several minutes prior to mating. The eggs of this species measure 3.7—3.8 x 2.0—2.2 mm. These insects can stridulate loudly enough to be heard at a distance of six feet. Stridulation is accomplished by rubbing the inner face of the hind femora against the opposing side of the abdomen. The smaller species mated readily in the laboratory; in this case the male rapidly pursued the female while the latter invariably retreated. The eggs of this species measure 2.9—3.1 x 1.8—1.95 mm. Stridulating organs are present and the femora are rubbed against the abdomen as in the large species,

but the human ear can but rarely detect the sound, even at close range.

A rather thorough search of the literature on the genus failed to net anything which would serve to identify these species. Hebard's table (N. Y. Ent. Soc., vol. XXIV, pp. 70-86) is by far the best, but was inadequate in definitely determining individual specimens. The spines and spurs of the hind tibiæ, upon which previous taxonomic work was largely based, are so variable in size and number as to be almost worthless. Specimens of the large and small species were sent to Mr. Caudell, who says: "I should say that from the variability of the characters used they all might be either *longispina* or *fuscus*. The simplest way out would seem to be to call all specimens of this genus *Stenopelmatus fuscus* as all our crickets are now *Gryllus assimilis*."

In the collection of the California Academy of Sciences there are specimens of *S. fuscus, longispina* and *pictus,* about fourteen specimens in all, which were identified by Hebard, apparently on the basis of tibial spines, the relative length of metatarsus and inner apical spine of the hind tibia. This latter character, as has been pointed out, is not dependable and varies from one extreme *(S. fuscus)* to the other *(S. longispina)* in the same locality in Berkeley. From the above it would seem that there is as yet no definite character by which these two species may be separated. It is our opinion, based upon examination of such material as is available, field study, and a study of breeding habits, that *S. fuscus* and *S. longispina* are not distinct species, and that the latter name should be made a synonym of *S. fuscus*. After studying the literature, we have arrived at the conclusion that *S. fuscus* is the larger of the two species at hand and that the smaller species is as yet undescribed, probably having been overlooked in the past as a nymph.

The genus having comparatively recently lost its wings, the thorax is in an inconstant or transitional state, and relative dimensions are not to be relied upon to any great extent. The form and shape of the head is also inconstant, since the genus is subject to magacephaly and other abnormalities. The mouth-

parts, in the series examined, show no characters of value. The rugosity and dentition of the mandibles is fairly constant, except as use reduces the teeth. The ovipositor is of some value, when used comparatively. The male genitalia consist of a fleshy bursa copulatrix which seemingly presents no characters of value, and in any case is too difficult to preserve to be of value in identifying cabinet material. The punctuation of the head shows differences of some value. Color is apparently not very reliable, varying from very light to dark in the same locality. In preserved specimens, unless in alcohol, it has been difficult to use measurements of the abdomen because of the great shriveling of the parts in drying. By injection and hardening these soft parts may be preserved in more or less their natural condition, but the size and shape of the abdomen varies much with the condition of the insect, whether or not full of food, eggs, parasites, etc. In general, the females are large and full-bodied. The males are usually somewhat smaller, with the legs longer and the abdomen smaller in proportion and laterally compressed.

The characters which we have found to be of most value in distinguishing between *S. fuscus* Hald. and *S. intermedius* n. sp. are the shape of the anterior plate of the prosternum, the size and shape of the stridulating plates on the inner surface of the hind femora, punctuation of the head, basal antennal joints, and size. A number of attempts were made to interbreed *S. fuscus* with *S. intermedius*. *S. intermedius* males were placed with *S. fuscus* females and *S. fuscus* males with *S. intermedius* females, but in no case did mating occur. No difficulty was experienced in breeding each species within itself.

Stenopelmatus fuscus Hald.

Punctures distinct along the frontal (epicranial) suture, especially above and below the oblique arms between the eyes. On either side with two vertical lines of punctures, one just behind the eye and inclining slightly medially above, the other about halfway between the eye and the suture; these thin out above, but attain the vertex and in most cases extend to the anterior margin of the pronotum; angle at which the two oblique arms meet the frontal suture fairly obtuse; oblique arms nearly straight, their apparent ending being near the upper margin of the insertion of the basal antennal joint. Oblique sutures themselves wide and depressed. At and above the

fronto-clypeal suture, with a triangular depressed rugose area, the sculpture tending to run in oblique lines from the center outward and downward. Punctuation in some immature specimens sparse, rarely failing to attain the vertex; lines of punctuation behind the eyes sometimes nearly lacking. Blades of the ovipositor, in comparison with *S. intermedius,* somewhat longer, less rounded and not so heavy when viewed from the side, when viewed dorsally, meeting at a more acute angle. The basal antennal joints, while somewhat variable may prove to be of some value; in general, the third joint is subequal to the second, both together being equal to the first, the fourth being one-third as long as the third.

The shape of the prosternum, while somewhat variable, seems to be constant enough to be of some value, at least in separating the forms from any one region. It is divided into a large basal plate, with wing-like lateral areas separated by postero-lateral notches and a shallow longitudinal groove, and a smaller anterior plate, separated from the basal by a deep groove. Basal plate large, flat, truncate posteriorly; lateral notches quite sharp; grooves between the middle and lateral plates shallow and ill-defined; lateral plates rather sharp, narrowing anteriorly; anterior plate smaller, posterior margin regularly arcuate, postero-lateral angles evenly rounded, the whole lateral and anterior margin forming an even curve. In some specimens the anterior plate is semicircular, and in a few the anterior margin is squarely truncate, but in the majority of cases this plate is not more than twice as wide as long, and in many cases is noticeably less.

Stridulating organ * consisting of very small, raised, chitinous plates on the inner surface of the hind femora, compactly grouped on the basal portion of the femur near its upper or anterior margin; these plates arranged in rows which may be either straight or slightly wavy, the direction of the rows being at an angle of about 30 degrees with a line connecting the coxa and base of tibia (vertex of the angle toward the coxa); the width of the rows varies from 10 to 12 microns, but this variation cannot be correlated with age. In young or recently moulted specimens the plates rise to a blunt point on their free margins; in older specimens wear has reduced the free margin to a smooth flat curve, or to a straight line. The plates are in contact with one another laterally.

	Maximum	Minimum	Mean
Length of hind tibiæ, ♀	17.0 mm.	12.0 mm.	15.0 mm.
Length of hind tibiæ, ♂	19.0	17.0	18.0
Length of notum, ♀	9.0	8.0	8.3
Length of notum, ♂	9.0	9.0	8.3
Total length, ♀	48.0	42.0	45.5
Total length, ♂	37.0	35.0	36.0

* Mr. C. D. Duncan (Ent. News, vol. xxxiv, No. 3, p. 74) figured the differences in stridulating plates as a sexual difference in *S. longispina* Brunner. Since we find both of these types of plates in both males and females this cannot be a sexual difference. We would place his female (fig. B) in *S. intermedius* and his male (fig. A) in *S. fuscus*. Duncan's figure B resembles very closely the stridulating plates of specimens from Pasadena, which superficially resemble *S. fuscus*.

Stenopelmatus intermedius Davis and Smith, n. sp.

Punctuation of head sparse, the lines of punctures barely attaining the vertex; a diffuse finer punctuation over the whole frons in addition to the coarser punctuation of the sutures and punctate lines. Angle of junction of the frontal suture somewhat more acute, the oblique arms curved, their apparent ending being above the insertion of the basal antennal joints, the sutures themselves very fine and even. Rugose area above the fronto-clypeal suture somewhat larger in proportion, the rugosity transverse rather than oblique. Third basal antennal joint longer than second, both together being subequal to the first, the fourth one-third as long as the third. Ovipositor of female shorter, stouter, more rounded, more abruptly curved upward as seen from the side, the blades meeting at a more obtuse angle (about 40-45 degrees) as viewed dorsally. Basal plate of prosternum fairly large, the postero-lateral notches wider and more rounded; posterior margin squarely truncate in the female, evenly rounded in the male; lateral plates wider in proportion, not so much narrowed anteriorly, the posterior angles directed more laterally; anterior plate narrow, at least two and one-half times as wide as long, its posterior margin regularly arcuate, the anterior usually squarely truncate, sometimes rounded. Stridulating organ occupying the same location on the hind femur as in *S. fuscus;* plates arranged in rows but the rows not as distinct. It is not possible to assign a definite line of direction to these rows since the plates are more or less equally spaced, and seem aligned in several directions. Width of the row (measured from the free margin of a plate to the free margin of a plate in the adjacent row) varying from 14 to 20 microns; variation in width of a row not correlated with age; free margins of the plates smooth curves, far more strongly arcuate, without a blunt tooth arising at the crest of the curve; not reduced to a straight line by wear, each plate standing apart from all its neighbors, with no contact laterally; the distance between plates varying from 2 to 4 microns. Fine secondary punctuation of the frons almost lacking in some specimens; in most with a fine sculpture, the result of scratching by earth particles while digging. Length of the basal antennal joints varying, the third, in some cases, being subequal to the second and the fourth from one-fourth to one-third as long as the third. In some specimens (especially males) the posterior margin of the basal plate of the prothorax is rounded, but in most cases it is squarely truncate, and in some specimens it may be slightly emarginate. The anterior margin of the anterior plate is also subject to some variation, but in all cases observed is at least slightly truncate.

	Maximum	Minimum	Mean
Length of tibiæ, ♀	7.5 mm.	6.0 mm.	6.9 mm.
Length of tibiæ, ♂	8.1	7.8	8.0
Length of notum, ♀	5.0	4.0	4.6
Length of notum, ♂	4.5	4.5	4.5
Total length (dry), ♀	48.0	42.0	45.5
Total length (dry), ♂	37.0	35.0	36.0

Holotype, ♀, (No. 1875), Oakland, California, December, 1925, and allotype, ♂ (No. 1876), Oakland, California, December, 1925, in the California Academy of Sciences. Three pairs of paratypes from the same locality are to be deposited, one pair in each of the three following museums: United States National Museum, Philadelphia Academy of Natural Science, and Entomological Department of the University of California.

These specimens were undoubtedly mature, since they successfully copulated before they were killed. This species might at first be taken for a form intermediate between *S. fuscus* and *S. pictus*. According to the characters of Hebard's table it would come under *S. longispina*, the spination of the hind tibiæ being the same as that given for that species. In size and general appearance this species more closely resembles *S. pictus*, except that the dark lines on the front are lacking.

Stenopelmatus pictus Scud. *

Heavy punctuation of the head practically lacking, the secondary punctuation extremely fine and sparse. Frontal sutures much as in *intermedius*, as is the rugosity above the fronto-clypeal suture. Basal antennal joints about the same, except that the fourth is only one-fourth as long as the third. Ovipositor of the female longer, less stout, the angle formed by the joining of the apices of the blades more acute. Basal plate of the prosternum somewhat arcuate posteriorly, the lateral plates quite wide, their posterior angles rounded and not laterally directed. Anterior plate very transverse, about seven times as wide as long, fairly regularly arcuate posteriorly, sinuately truncate in front.

* Since these notes were prepared we have had an opportunity to examine a specimen of *S. pictus* from Suisun, California, sent by Dr. Stanley Freeborn, and a series of eleven specimens taken in lower Panoche Canyon, Fresno County, California, by Mr. F. W. Wymore and Dr. E. C. Van Dyke.

The specimen from Suisun agrees closely with the characters stated previously. Those from Panoche Canyon agree in all except the shape of the anterior prosternal plate, which, in this series, varies from transverse and very short to nearly triangular; the black markings of the head and thorax, however, are very distinctive. This species on the whole is somewhat larger than *S. intermedius*. As these specimens were all dead when received there has been no opportunity for observation of habits and mating reactions.

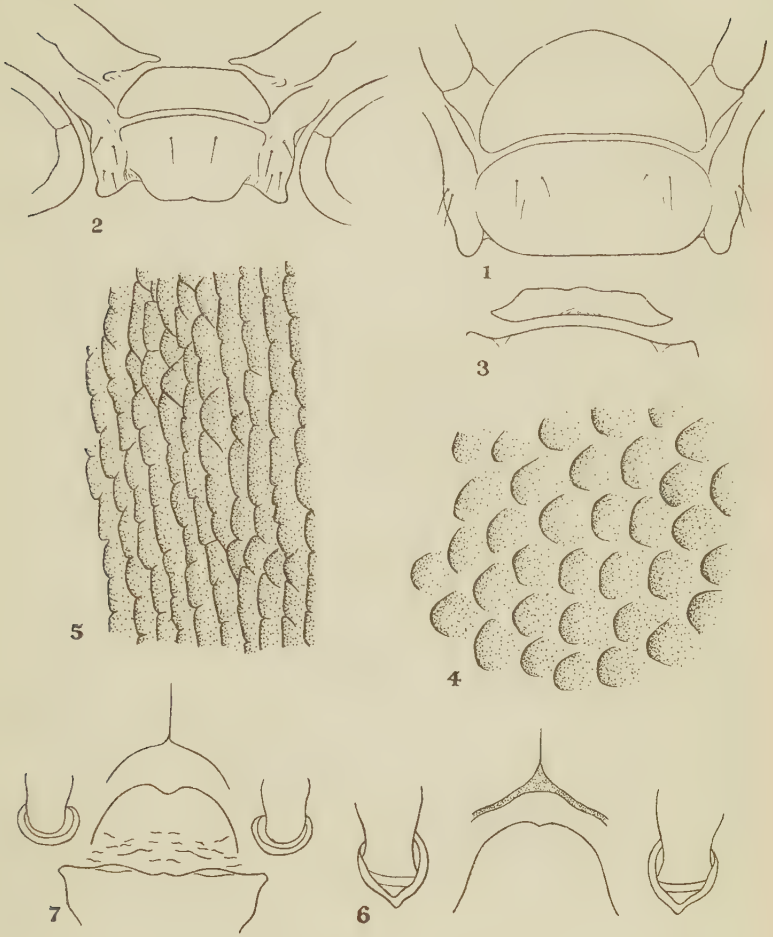
Length of hind tibiæ, ♀, 6.5 mm.; length of notum, ♀, 4.0; total length, ♀, 21.0.

There are no specimens available from which to make slides of the stridulating plates, but it is to be expected that these would resemble those of *intermedius* quite closely. The only specimen of *S. pictus* available for examination at present is a female in the collection of the California Academy of Sciences, taken by E. P. Van Duzee in San Francisco, April 11, 1919. This specimen was determined as *pictus* by Hebard in 1920 but is marked "atypical." The presence of the dark lines on the head serve, however, to distinguish it immediately from *S. intermedius*.

Preparation of Soft-Bodied Insects

In mounting such soft-bodied insects as Stenopelmatus (Orthoptera) for the cabinet, it is found that great difficulty is experienced in preventing the abdomen from shriveling to such an extent as to be useless for measurement or other identification. Removing the viscera through a ventral longitudinal suture and filling the abdomen with cotton has been tried, with indifferent success. I have found that by injecting the specimen hypodermically with 95 per cent alcohol and then immersing in alcohol of the same strength for a month or six weeks, very satisfactory results may be obtained, the abdomen shriveling only to a very slight extent. Formalin or some other rapidly hardening agent might be used with about the same or a little better success.—Alonzo C. Davis.

After a recent severe outbreak of the oak moth *(Phryganidea californica)* at Mill Valley, California, I placed a handful of the chrysalids in a container. At one average inspection there were five moths and fifty parasites *(Ephialtes behrensi* Cress.) in the box. Later some small Tachinids and a few *Chalcis ovata* emerged. This would indicate a high rate of parasitism.—E. P. Van Duzee.



Explanation of Figures

Fig. 1, Prosternum of *Stenopelmatus fuscus;* 2, same of *intermedius;* 3, anterior prosternal plate of *pictus;* 4, stridulatory plates of *intermedius;* 5, same of *fuscus;* 6, frontal sutures of *fuscus;* same of *intermedius.*

SOME NEW SIPHONAPTERA FROM CALIFORNIA

BY CARROLL FOX

Phalacropsylla cummingi Fox, n. sp.

Figs. I and II

Frons provided with two approximate rows of bristles, an anterior of three weak bristles and a second row of four stout bristles of about equal size, the innermost being placed at the edge of the antennal groove above the vestigial eye. Superimposed genal spines two, the lower longer and broader (fig. 1). Labial palpi reaching almost to the apex of fore coxæ.

Hind coxæ with a row of six spineform bristles (spinelets) on its inner side. Outer side of hind femur with a row of four bristles toward the apex and two or three toward the base, the inner side being without bristles. Hind tibia with three rows of bristles in addition to those placed near the fourth, fifth and sixth dorsal pairs as in *P. paradisea,* giving the appearance of having the bristles on posterior border of tibia in groups of three. First segment of the hind tarsus one-third longer than the second (6.4).

Process of clasper (fig. 2, P) prominent and not divided by a ventral suture; finger extending well above the process, its ventral border convex and provided with thin bristles extending for nearly its entire length; below the middle with a submarginal row of two or three stouter bristles on the inner side (fig. 2, F).

Vertical arm of ninth sternite straighter and wider than in *P. paradisea* and not divided at apex; horizontal arm with a row of bristles on its distal half, the upper three of which are stout, the middle one much the stoutest (fig. 2, IX st). Length, 1.8 mm.

Los Angeles, California, 1925, one male taken off *Diphodomys agilis.*

Type No. 28918, U. S. N. M.

Leptopsylla ebrighti Fox, n. sp.

Figs. III and IV

This new species of *Leptopsylla* is quite distinct from the other American forms.

Genal spines two; three of the bristles in the fronto-marginal row, at the most prominent part of the frons, short, heavy and spine-like. Labial palpi reaching a little beyond the middle of the fore coxæ. Pronotal comb containing about twenty-four spines. Mesonotum about one-fourth longer than the metanotum in both sexes; the bristles on the metathoracic epimerum eight in number arranged

2: 4: 2: in the male, and 3: 3: 2: in the female. Bristles in the posterior row on abdominal tergites II to VI in the female number 15 to 17, in the male about 12. Abdominal sternites IV to VI, each bearing a single row of 8 bristles in the female, 4 or 5 in the male. Seventh sternite in the female slightly incised ventrally, above the incision with a broadly rounded lobe and carrying a row of 12 bristles; in the male with a row of from 4 to 6 bristles. Eighth tergite in the male with 5 lateral bristles, in the female with a submarginal row of bristles and two lateral rows, the anterior containing 4 small and the posterior 6 large bristles (fig. 4). Abdominal sternite VIII of the male without bristles ventrally, produced laterally into a rounded lobe at the apex of which are 2 fairly long and 1 or 2 shorter bristles (fig. 3, VIII st).

Style short and thick, wide at the base and at the middle, but narrow at tip where there is a long bristle, and below this three smaller bristles. Antepygidial bristles 4 (or 5) on each side in the female (in the type specimen 4 on one side and 5 on the other), and 3 on each side in the male (in the type specimen 3 on on side and 2 on the other). Hind femur with some bristles basally and apically but no lateral row; the hind tibia with a row of 8 bristles on the outer side and 4 or 5 on the inner.

Process of the claspers broad at tip, reaching to about the top of the finger (fig. 3, P); the finger almost straight on its dorsal border, widest near the tip, the ventral border carrying three large and several smaller bristles. The finger may be roughly described as having the shape of a right-angle triangle with the apex at the pedicle and the caudo-ventral corner broadly rounded; manubrium slender, acuminate and gently curved upward (fig. 3, F). Horizontal arm of the ninth sternite slightly curved upward, its apex bluntly pointed, its ventral edge convex and carrying six rather long and some smaller bristles (fig. 3, IX st). Length: male, 1.8 mm.; female, 2.8 mm.

Los Angeles, California, July, 1925, a series of males and females obtained from *Neotoma fuscipes*.

Type No. 28919, U. S. N. M.

Anomiopsyllus californicus Baker 1904

Figs. V and IX

1904, Baker, Invert. Pacifica, I, p. 39.
1915, Rothschild, Ectoparasites, I, p. 45.

Baker's description was based on one female from *Spilogale phenax* taken at Claremont, Los Angeles County, California. The writer has a series of both sexes from *Neotoma fuscipes* and *Spilogale phenax* taken at Los Angeles, California. The male is reported herein for the first time.

Rothschild acquired the type specimen from Baker. Unfortunately, the receptaculum seminis in the type is almost destroyed. Rothschild, comparing a series of *Anomiopsyllus nudatus* which he had from Paradise, Arizona, with the type of *californicus* came to the conclusion that *californicus* was the same as *nudatus*. These fleas are certainly very much alike but there are minor differences in the shape of the receptaculum seminis (fig. 5), and discovery of the male of *californicus* shows Rothschild to be in error when he pronounced *californicus* to be a synonym of *nudatus*.

In both species there are three small spine-like bristles on the finger of the claspers. In *californicus* these are arranged close together in an oblique row near the apex of the finger (fig. 9, F). In *nudatus* they are much more widely separated along the posterior border of the finger, two of them above and one far below.

Hoplopsyllus powersi Fox, n. sp.

Figs. VIII and XI

Labial palpi reaching to about two-thirds of the anterior coxæ. Pronotal comb composed of from 14 to 16 spines; the metepimerum with 9 or 10 bristles in the male (5:4 or 6:4) and 12 or 14 in the female (6:6 or 6:8). Hind femur carrying a row of about 6 bristles on its inner side, the hind tibia a row of about 10 on its outer side; one of the apical bristles of the second hind tarsal segment extends beyond the middle of the fifth segment. Sternite VII in the female has a row of from 14 to 15 bristles on the two sides together, in the male about 4. Sternite VIII in the male bears laterally a group of about 7 bristles; in the female there is a lateral row of 5 (or 6), while apically there is a row of 8 bristles on the outer side and a row of 7 or 8 on the inner side.

Style slightly more than twice as long as broad at base (9:4). Receptaculum seminis distinctly flattened proximally (fig. 8); bristled process of the claspers (fig. 11, P) about one-third longer than wide at the middle (10:15), the toothed process five times as long as wide, exclusive of the tooth (5:25) (fig. 11, P. 2). Length: male, 1.6 mm.; female, 2.3 mm.

Los Angeles, California, 1925, taken on *Sylvilagus bachmani*.

Type No. 28920, U. S. N. M.

Hoplopsyllus minutus Fox, n. sp.

Figs. VI and X

A small flea. Only the female known.

Labial palpi extending to three-fourths of anterior coxæ; maxillary palpi only a little shorter than the labial palpi. Pronotum bearing a comb of 13 spines; metepimerum with 7 bristles (3:4). Hind femur with a row of 5 bristles on the inner side; hind tibia with a row of 8 or 9 bristles on the outer side; longest apical bristle of the second hind tarsal segment extending to the tip of the fifth segment.

Abdominal sternites II to VI each with a row of about 4 bristles; sternite VII carrying a row of 12 or 13 bristles; eighth tergite with a marginal row of 9 or 10 bristles, a submarginal row of 8 and laterally a row of 5 bristles. Style about twice as long as broad at base, carrying one apical and one subapical bristle (fig. 10). The head of the receptaculum seminis almost round (fig. 6). Length, 1.3 mm.

San Francisco, California, 1908, taken on *Sylvilagus bachmani.*

Type No. 28922, U. S. N. M.

EXPLANATION OF FIGURES

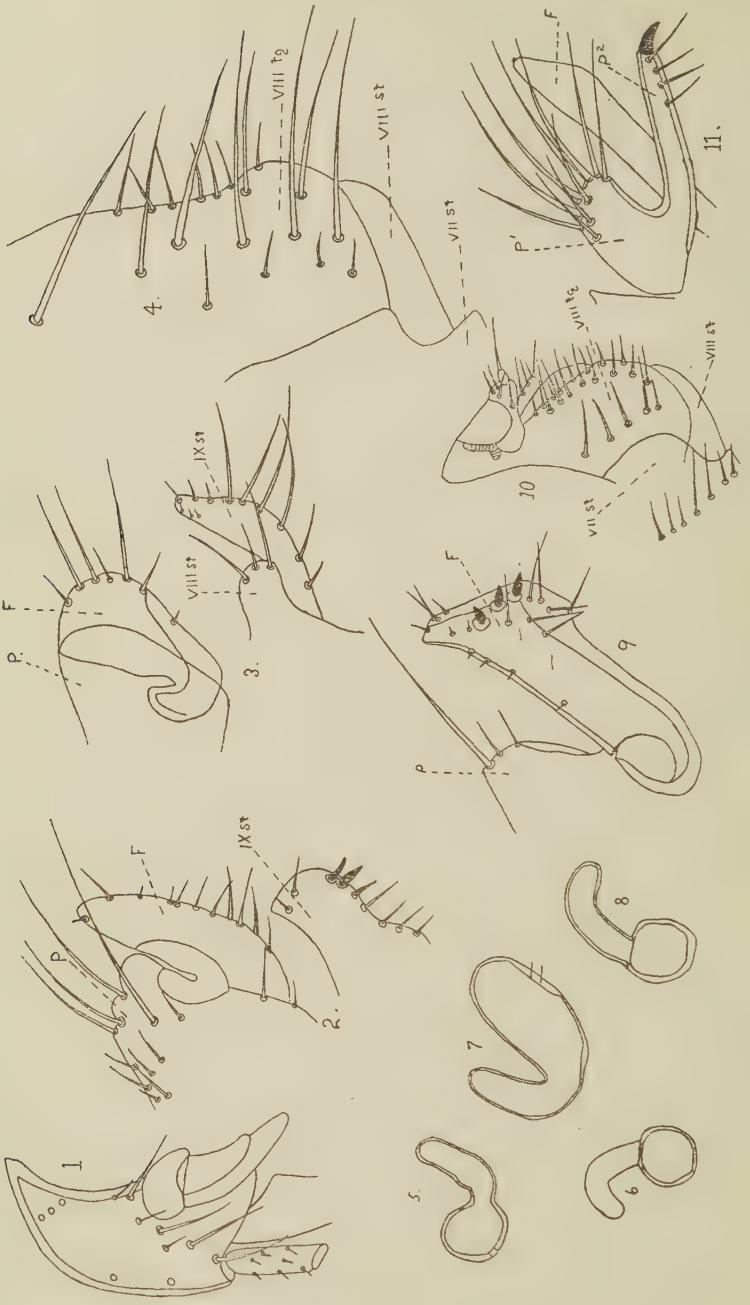
1. *Phalacropsylla cummingi,* frons showing the genal spines.
2. *Phalacropsylla cummingi,* male clasping organs.
3. *Leptopsylla ebrighti,* male clasping organs.
4. *Leptopsylla ebrighti,* female, abdominal segments VII and VIII.
5. *Anomiopsyllus californicus,* receptaculum seminis.
6. *Hoplopsyllus minutus,* receptaculum seminis.
7. *Leptopsylla ebrighti,* receptaculum seminis.
8. *Hoplopsylla powersi,* receptaculum seminis.
9. *Anomiopsyllus californicus,* male, ninth tergite.
10. *Hoplopsyllus minutus,* female, terminal segments of abdomen.
11. *Hoplopsyllus powersi,* male, ninth tergite.

NOTE

On October 24, under a band on a large crabapple tree 32 codling moth cocoons were found, 22 of which were parasitized by *Ænoplex carpocapsæ* Cush. In the neighborhood of this tree 32 of the 417 codling moth larvæ collected were parasitized.

In September a number of the chalcids, *Dibrachys boucheanus* Ratz., were reared from a codling moth larva. Apparently, this parasite functions usually as a secondary, for in December it was reared from the larvæ of *Ænoplex carpocapsæ* Cush.

Ephialtes sanguincipes (Cr.) was reared from a codling moth larva on August 8.—Stanley E. Flanders.


1
2.
IX st
F
P
3.
VIII st
IX st
F
P
4.
VIII t_2
VIII st
VII st
5
6
7
8
9
F
P
10
VIII t_2
VIII st
VII st
11.
F
P^2
P'

ON THE PLACEMENT OF "PSEUDANARTA" FLAVIDENS GRT. (LEPID., PHALAENIDÆ)

BY WILLIAM BARNES AND F. H. BENJAMIN
Decatur, Illinois

POLIA[1] FLAVIDENS Grt.

1879, Grote, Bull. Geol. Surv. Terr., V, 205, *Hadena (Pseudanarta).*
1889, Smith, Ent. Amer., V, 179, *Pseudanarta.*
1893, Smith, Bull. U. S. N. M., XLIV, 149, *Pseudanarta.*
1903, Dyar, Bull. U. S. N. M., LII, 124, No. 1309, *Pseudanarta.*
1906, Hampson, Cat. Lep. Phal. B. M., VI, 195, pl. CI, f 11, *Pseudanarta.*
1908, Smith, Jour. N. Y. Ent. Soc., XVI, 88, *Pseudanarta.*

Described from specimens from Colorado, Mead and Henry Edwards. Beutenmueller, 1892, Bull. Am. Mus. Nat. Hist., IV, does not list a type in the American Museum of Natural History. Hampson, 1906, figures the species and lists a female type in the British Museum. We possess a specimen compared with this type by Dr. J. McDunnough.

The species has been correctly determined in collections, but all authors appear to have overlooked the fact that it has hairy eyes and therefore does not belong in the Cuculliinæ, but falls into the Hadeninæ. By Hampson's keys, 1905, Cat. Lep. Phal. B. M., V, it would run to the genus *Trichestra* Hamp., but appears to be there out of place.

The genera of the Hadeninæ need revision, so we tentatively place the species with its allies *secedens* Wlk. and *basivirida* B. and McD. The three agree in possessing yellow basal areas on their secondaries, and lashed eyes, but differ considerably in characters of palpi and vestiture. It is probable that three distinct genera will ultimately be erected for these three species, but for the present they can rest in *"Polia."*

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1 Sense Hampson, 1905. We are cognizant that *Polia* is a Tentamen genus with type *flavicincta*, belonging to the subfamily Cuculliinæ; merely republished by Ochsenheimer, 1816, who credits to Hübner. Hampson, 1907, Ann. Mag. Nat. Hist., (7), XIX, 252, uses *Miselia*, with type designated as *conspersa*, in place of *Polia*. But *Miselia* is also a Tentamen genus, with type *oxycantha*, belonging in the subfamily Cuculliinæ; merely republished by Ochsenheimer, 1816, who credits to Hübner. Like most European workers, Hampson has refused to accept generic names unless they were accompanied by a description in words, and not only rejects the Tentamen, but also the genera of Ochsenheimer. He, therefore, lists both *Polia* and *Miselia* from Treitschke, 1825. Probably the correct generic name for the bulk of the species placed by Hampson in *Polia*, or *Miselia*, will be *Hadena* Schr.

ON THE DISTRIBUTION OF OMPHALOCERA OCCIDENTALIS B. AND BENJ. (LEPID., PYRALIDÆ, PYRALINÆ)

BY WILLIAM BARNES AND F. H. BENJAMIN
Decatur, Illinois

Omphalocera occidentalis B. and Benj.

1924, Barnes and Benjamin, Contrib. N. H. Lep. N. A., V, (3), 191, *Omphalocera.*

Described from a holotype ♂, Clark County, Nevada, 24-30 June, and 1 ♂ paratype, High Rolls, New Mexico.

A fine pair have been received from Mr. Tom Spalding, taken at Eureka, Utah, July 4. The female is very similar to the male in coloration and maculation.

A NEW SPECIES OF PLASTOCERIDÆ IN THE GENUS EUTHYSANIUS (COLEOPTERA)

BY VASCO M. TANNER
Brigham Young University, Provo, Utah

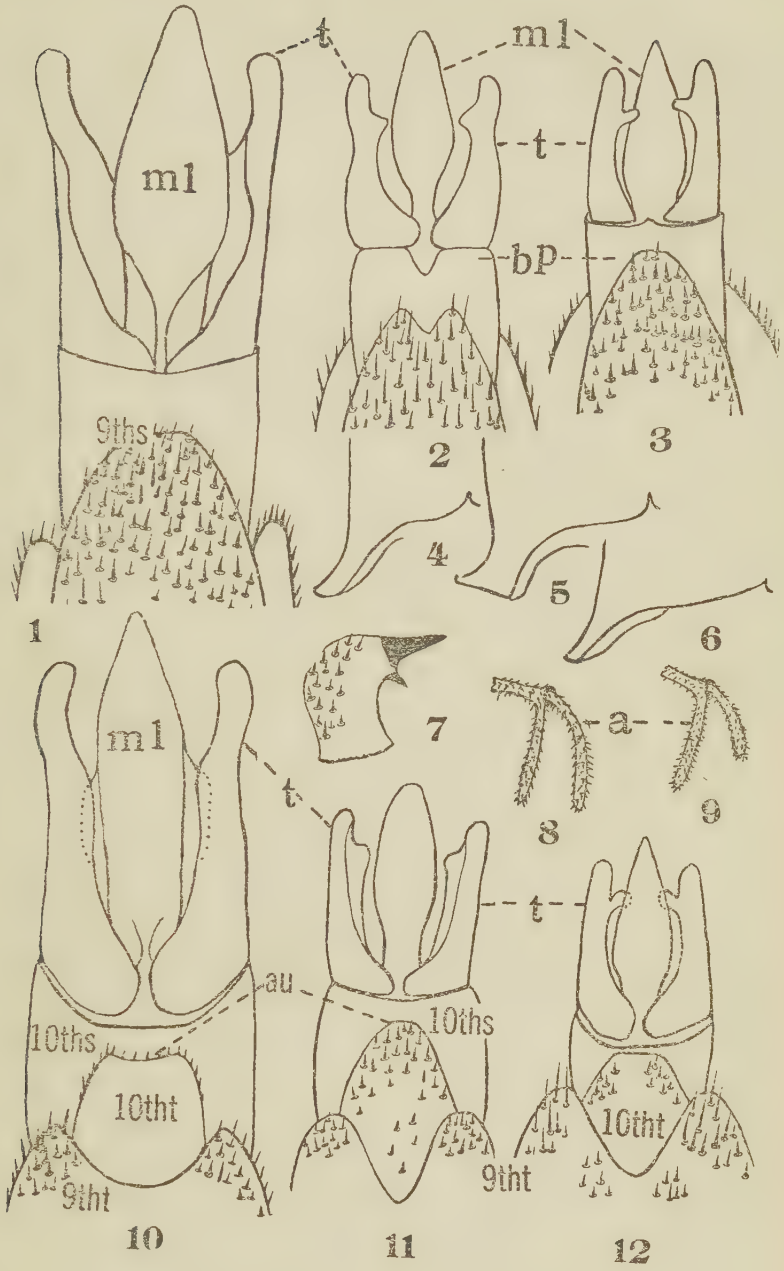
In 1853 Dr. John L. LeConte established the genus *Euthysanius* and described the species *lautus* as the type of the genus. In 1866 he described the species *pretiosus*, which was the second of the two species in this genus. These descriptions are brief and rather inadequate because important morphological characters are ignored. The genitalia of these species, for example, have valuable characters which may be utilized in separating them. Some of the recent workers in coleopterology have failed to base their descriptions upon definite morphological characters and as a result their descriptions are almost worthless. It seems much safer to work with many morphological characters than to split up groups and make new species on a few variable characters.

Euthysanius blaisdelli Tanner, sp. nov.

(Figs. 2, 4, 7, 8 and 11)

Material studied: Three males, collected by the writer and Mr. Angus M. Woodbury in Zion National Park, Utah, August, 1925.

Male. General color a rather light brown. Length, 17-19 mm. Head broader than long; dorsal side pubescent and punctate; ventral with a few small setæ; maxillary palpi about half as long as the head, with long setæ at the distal end of each article; mandibles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(fig. 7) rather large with numerous stout setæ on the dorsal outer margin; antennæ (fig. 8) pectinate, very pubescent, reddish brown throughout; pronotum almost square, except for the posterior outer margins which extend back to the humeri (fig. 4); elytra about three times as long as wide, almost parallel, bearing numerous small pale setæ; legs long and slender, of uniform chestnut brown color; abdomen long and slender, the ventral side densely covered with small setæ, segmentation clearly discernible, there being ten tergites and ten sternites present; ædeagus leaving the body between the ninth and tenth sternites; genitalia (figs. 2 and 11) much like that of *E. pretiosus* Lec. (figs. 3 and 12).

In this species the ninth sternite is emarginate; in *E. pretiosus* Lec., to which it is most closely allied, it is not emarginate. The inner surface of the tegmen is very different in these two species, as is also the basal piece. The genitalia (figs. 1 and 10) and the antennæ (fig. 9) of *E. lautus* Lec. are noticeably distinct from those of the other two species.

Type, male, (No. 21) in my collection. Paratype in the collection of Dr. Frank E. Blaisdell, Sr. This species is named in honor of my good friend Doctor Blaisdell, who has contributed so much to my collection of Coleoptera.

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Explanation of Figures

Fig. 1. Ventral view of the genitalia of ***Euthysanius lautus*** **Lec.**
Fig. 2. Same of *E. blaisdelli* sp. nov.
Fig. 3. Same of *E. pretiosus* Lec.
Fig. 4. Posterior outer margin of pronotum in *E. blaisdelli.*
Fig. 5. Same in *E. pretiosus.*
Fig. 6. Same in *E. lautus.*
Fig. 7. Mandible of *E. blaisdelli.*
Fig. 8. Last two segments of the antenna in *E. blaisdelli.*
Fig. 9. Same in *E. lautus.*
Fig. 10. Dorsal view of the genitalia of *E. lautus.*
Fig. 11. Same of *E. blaisdelli.*
Fig. 12. Same of *E. pretiosus.*

ml.—median lobe.
t.—tegmen.
bp.—basal-piece.
au.—anus.
9ths.—ninth sternite.
10ths.—tenth sternite.
9tht.—ninth tergite.
10tht.—tenth tergite.

A LIST OF THE COLEOPTERA TAKEN IN ALASKA AND ADJACENT PARTS OF THE YUKON TERRITORY IN THE SUMMER OF 1924

BY H. C. FALL
Tyngsboro, Massachusetts

(Continued from page 154)

Lepturoides (Campylus) variabilis Esch. Dawson; Eagle; Fort Yukon; McKinley Park. Very common on grass and bushes along the Yukon River and frequently seen flying by day about the streets of Dawson.

Ludius (Corymbites) resplendens Esch. Skagway, a single specimen beaten from spruce on a mountain trail above the town.

Ludius (Corymbites) lobatus Esch. Seward, two examples, one entirely dark, the other with the elytra ferruginous.

Ludius (Corymbites) morulus Lec. White Horse; Dawson.

**Ludius (Corymbites) nigricollis* Lec. Skagway.

Ludius (Paranomus) costalis Payk. Dawson; Eagle.

**Hemicrepidius (Asaphes) oregonus* Lec. Ketchikan; Wrangel.

Cryptohypnus abbreviatus Say. Dawson.

Cryptohypnus nocturnus Esch. White Horse; Skagway.

Cryptohypnus nocturnus var. *lucidulus* Mann. Skagway; McKinley Park; Seward.

Hypnoidus tumescens Lec. Skagway; Dawson.

Hypnoidus musculus Esch. Skagway.

***Hypnoidus extricatus** Fall, n. sp.

Moderately elongate, subdepressed, black scarcely ænescent, moderately shining, finely thinly cinereo-pubescent. Head quite strongly densely punctate, vertex impressed. Antennæ entirely piceous, slender, the apical three joints passing the hind angles of the thorax. Prothorax about one-fifth wider than long, narrowed at apex; widest at about the middle where the sides are strongly arcuate, sinuate before the hind angles which are distinctly divergent and with a fine carina extending forward one-third or two-fifths the thoracic length; surface numerously but not very densely, finely, punctate, the punctures evidently stronger and closer anteriorly but not in the least asperate;

median line narrowly smooth. Elytra three times as long as thorax and at base slightly wider than the latter; humeri obtuse, sides nearly straight or feebly arcuate in basal two-thirds, thence convergent and narrowly rounded at apex; striæ fine and entire, finely punctate, intervals flat, numerously finely punctate. Body beneath finely sparsely punctate, the punctures distant by about twice their own diameters as a rule, a little coarser on the prosternum and toward the sides of the pro- and meta-sterna, finest on the ventral segments. Legs piceous, the tarsi and sometimes the coxæ more or less pale. Length (type male), 5 mm.; width, 1.8 mm.

Described from three examples, one each from McKinley Park (type), Child's Glacier and Seward, Alaska, all taken by the writer. The Seward example is stouter than the others and is doubtless a female. This species does not fit well into any of the groups indicated by Horn. Because of its depressed form it would by Horn's table be likely to be referred to the *striatulus* group, but the sculpture is much more in harmony with the *melsheimeri* group, where I think it may for the present be placed in the vicinity of *tumescens*. The size is a little larger than in *tumescens* and the antennæ are conspicuously longer than in the latter or any of its near relatives.

Hypnoidus striatulus Lec. Skagway.

**Elater* sp. near and perhaps the same as *behrensi* Horn. Skagway.

FAMILY MELASIDÆ

Epiphanis cornutus Esch. Seward.

FAMILY BUPRESTIDÆ

Dicerca tenebrica Kby. (*prolongata* Lec.). Yukon River forty miles above Fort Yukon, on spruce wood pile; Rampart (Kusche); Dawson (Kusche). These specimens are the same as an example compared by Saunders many years ago with the types and kindly sent to me by Mr. Arrow for examination. Kirby's original specimens, so Mr. Arrow writes me, are for some reason not now in the Museum collection. Just what *tenebrica* is has long been a matter of doubt with our coleopterists. LeConte asso-

ciated it doubtfully with his *lacustris* (= *lugubris* ♀). Crotch in 1873 surmised from the description that it might be the same as *prolongata* and his surmise proves to be correct. It stands now in the Leng List as a synonym of *divaricata*. The placing of *lugubris* as a synonym of *tenebrosa* in the Leng List is also an error, the former having the intermediate tibiæ of the male simple, whereas in *tenebrosa* they are toothed.

Dicerca tenebrosa Kby. Yukon River below Eagle; Dawson. This also is determined with certainty by comparison with one of Kirby's original specimens.

Melanophila drummondi Kby. Yukon River, west of Fort Yukon (Arctic Circle).

Melanophila acuminata DeG. Anchorage.

Chrysobothris trinervia Kby. Yukon River forty miles above Fort Yukon.

Agrilus politus Say. Dawson; Fort Yukon (Kusche).

FAMILY HETEROCERIDÆ

Heterocerus sp. Dawson.

FAMILY HELODIDÆ

Cyphon variabilis Thungb. Scow Bay; White Horse. The White Horse specimens are materially larger than those from Scow Bay. It is possible that careful investigation would show that one or both of these are distinct from *variabilis*.

FAMILY DERMESTIDÆ

**Byturus unicolor* Say. Skagway; Dawson.

Trogoderma sinistra Fall, n. sp.

Oblong-oval; similar in form to *ornata* but rather larger than the average specimens of that species. Body entirely black without trace of ornamentation, surface shining, pubescence short, subrecumbent, blackish throughout. Head about two-fifths as wide as the prothorax, rather coarsely and densely punctate, eyes feebly sinuate on inner margin. Antennæ (female) dull rufous, the first two joints blackish, club evidently four-jointed but not very abruptly formed, its length a little less than that of all the preceding joints. Prothorax about three-fifths wider than long, sides broadly arcuate and rapidly convergent from base to apex; punctuation finer than on the head, not

at all asperate, a little closer and coarser near the sides, the punctures as a rule separated by about their own diameters. Elytra slightly wider than, and about three times as long as, the prothorax, similarly finely, not densely, punctate. Prosternum and sides of metasternum more densely and coarsely punctate; abdomen finely punctured. Legs blackish, tarsi paler. Length, 3.9 mm.; width, 2.15 mm.

Described from a single female taken by the writer at Dawson, Yukon Territory, June 26, 1924.

This is the first entirely black Trogoderma to be described from our fauna. I have in my collection a pair (♂ ♀) of similarly black specimens from Aweme, Manitoba, which are probably specifically identical, but of this I do not feel entirely assured. They are considerably smaller (2.8-3.25 mm.) and seemingly a little narrower, the antennæ entirely rufous, the third joint very small in the male.

Perimegatoma perversa Fall, n. sp.

Narrowly oblong, cylindrical, convex; black, antennæ, tibiæ and tarsi ferruginous; pubescence short, stiff, inclined, entirely deep black; surface feebly shining. Head two-fifths as wide as the thorax, the latter moderately strongly transverse; sides arcuately narrowed from the base, side margins narrowly reflexed. Elytra about three and a half times as long as the thorax, sides broadly sinuate before the middle. Head and thorax coarsely and densely variolate-punctate, elytra a little less coarsely and densely so, the punctures subasperate toward the base, especially at sides. Body beneath similarly densely rather coarsely punctured, more rugosely so anteriorly. Antennal club about four-fifths as long as the entire stem, basal two joints moderately strongly transverse; apical joint about one-half longer than the two preceding, subtriangular, the lower edge strongly oblique. Length, 4.6 mm.; width, 1.8 mm.

Dawson, Yukon Territory; a single specimen. The antennal club is rather of the male type, but I am not sure that the specimen is a male.

This species, by good rights, should be either the *cylindrica* of Kirby or Mannerheim's *angularis*, but in *cylindrica* the body is said to be very minutely punctured and covered with decumbent cinerous hairs, and *angularis* is also said to be griseo-pubescent and with condensed white hairs on the hind angles of the thorax; absolute statements which are quite at variance with the present species.

FAMILY BYRRHIDÆ

Pedilophorus subcanus Lec. White Horse.

Pedilophorus acuminatus Mann. Sitka.

Simplocaria tessellata Lec. (? *metallica* Sturm). Yukon River forty miles below Fort Yukon; Dawson.

Cytilus alternatus Say. Skagway; Yukon River below Selkirk; Dawson.

Byrrhus concolor Kirby. Skagway; Yukon River (Sheep Creek below Eagle); Dawson; also on the Yukon below Selkirk, Yukon Territory, where numerous specimens were picked up on the boat while taking wood. Identification is made after study of an example sent me by Mr. Arrow who had compared it with Kirby's type.

Byrrhus sp. Certain specimens among those taken below Selkirk are of average larger size and have the transverse closed figure of the elytra defined by pale pubescence better defined than in the preceding. These are possibly *cyclophorus* Kby. Mr. Arrow writes me, however, that he is by no means sure that the *concolor* and *cyclophorus* types represent different species. Of *cyclophorus* he writes "has the whole of the lower surface and legs light red, but as the elytra are not quite black I think that very likely indicates immaturity." Of *concolor* (type) he remarks: "Has very faint traces of two series of small spots placed as in *cyclophorus*. It is very slightly smaller and relatively shorter."

**Byrrhus eximius* Lec. McKinley Park; Dawson; Yukon River below Selkirk, Yukon Territory.

Lioligla (Simplocaria) nitida Mots. Ketchikan.

FAMILY OSTOMIDÆ

Calitys scaber Thunb. Dawson.

FAMILY NITIDULIDÆ

Meligethes sævus Lec. Dawson.

Nitidula bipunctata L. Dawson. Several specimens having the form and characteristic elytral spots of this common introduced species, but blacker, legs entirely black or virtually so, and punctuation rather finer and sparser than in my examples of the latter.

Nitidula nigra Schf. Dawson; McKinley Park. With the preceding occurred examples without the elytral spots. These are undoubtedly the *nigra* of Schæffer. They do not differ specifically from the spotted form, but whether this is really a form of *bipunctata* or a distinct species I am somewhat in doubt.

**Omosita discoidea* Fabr. Skagway.

Epuræa terminalis Mann. Anchorage.

Epuræa truncatella Mann. Yukon River below Eagle; Dawson.

FAMILY CUCUJIDÆ

Pediacus fuscus Er. White Horse; Dawson; Anchorage.

Dendrophagus cygnæi Mann. Skagway.

FAMILY CRYPTOPHAGIDÆ

Antherophagus suturalis Mäkl. Skagway; McKinley Park.

**Cryptophagus difficilis* Csy. (LeConte MS). McKinley Park.

**Cryptophagus* sp. near the preceding. Eagle.

Henoticus serratus Gyll. Anchorage.

Cænoscelis ferruginea Sahlbg. Anchorage; White Horse.

Atomaria (Agathengis) sp. Yukon River, Yukon Territory, below Selkirk.

**Atomaria (Agathengis)* sp. Fort Yukon; Dawson.

Atomaria (Agathengis) vespertina Mäkl. Anchorage; White Horse.

Atomaria (Anchicera) kamtschatika Mots. Yukon River (Sheep Creek below Eagle); Anchorage; Skagway; Homer (W. S. McAlpine).

Atomaria (Anchicera) fulvipennis Mann.? Skagway; Homer (W. S. McAlpine).

**Atomaria (Anchicera)* sp. Yukon River below Eagle.

**Atomaria (Anchicera)* sp. Fort Yukon.

**Atomaria (Anchicera)* sp. McKinley Park.

Atomaria (Anchicera) sp. Dawson.

Atomaria (Anchicera) sp. Dawson. None of these unidentified species seem referable to any of those of Mannerheim of Mäklin.

FAMILY COLYDIIDÆ

**Lasconotus borealis* Horn. Yukon River below Eagle.

FAMILY LATHRIDIIDÆ

**Lathridius breviclavus* Fall. Yukon River below Eagle.

Lathridius cinnamopterus Mann. (=*montanus* Fall). Anchorage; Fort Yukon. Specimens taken at Anchorage are without hesitation referred to this hitherto unrecognized species. I have little doubt that *fulvipennis* Mann. is identical. Renewed study at this time enables me to say that the species that I described [1] under the name *armatulus* is the true *costicollis* of LeConte, while my *montanus* as indicated above seems not to differ from *cinnamopterus* as now identified. This leaves the species which I had previously supposed to be *costicollis* without a name and for this the name carinifer is now proposed. Making these changes in name the characters as given in my table apply, except that I was in error in saying that the front thighs are not toothed at base in the male of *montanus*. This tooth is very small but detectable in the type on renewed study; it is a little better developed in an Alaskan specimen. As now present in my collection the following localities are represented: *L. cinnamopterus* Mann. Anchorage and Fort Yukon, Alaska, Cœur d'Alene, Idaho; Leavenworth Valley, Colorado; British Columbia (Caraboo District); Eureka and Little River, northern California: *L. carinifer* new name (*costicollis* Fall, nec. LeConte), Astoria, Oregon; British Columbia; Park City, Utah; Colorado Springs, Colorado.

**Lathridius costicollis* Lec. Anchorage.

Enicmus protensicollis Mann. Seward; Skagway.

Enicmus consimilis Mann. McKinley Park.

**Corticaria varicolor* Fall. Skagway; White Horse.

***Corticaria arctophila** Fall, n. sp.

Fulvotestaceous, elytra more or less dark, piceotestaceous. Head two-thirds as wide as the prothorax, sparsely punctate; eyes rather large, moderately prominent; tempora about one-fourth the length of the eye as viewed from above. Antennæ reaching the hind margin of the thorax, joints all longer than wide. Prothorax large, subcordiform, a little wider than long; sides distinctly serrulate; disk a little flattened along the median line, a shallow fovea at base; sur-

[1] Trans. Am. Ent. Soc., 1899, p. 118.

face rather sparsely evenly punctate. Elytra about one-fifth wider than the thorax, oblong-oval, three-fourths or four-fifths longer than wide, striæ feebly impressed, strial punctures very little larger than those of the interspaces, the hairs springing from the latter more bristling than those from the strial punctures. Beneath sparsely punctate, the abdomen more finely so. Femora stout, a little more incrassate in the male. Prosternum as long before the coxæ as the length of the latter; middle coxæ very narrowly separated; metasternum and first ventral segment subequal in length.

Male. Front tibiæ distinctly bent and mucronate at tip; last ventral nearly as long as the two preceding, disk broadly concave, apex broadly truncate.

Female. Front tibiæ straight, unarmed at tip; last ventral as long as the two preceding, disk flattened, apex broadly rounded.

Length, 2 to 2.3 mm.

McKinley Park Station, Alaska, June 9, 1924, one male (type), two females. The specimens were beaten from an old bear skin found at a deserted camp a short distance south of the station.

This species by its characters would fall between *rudis* and *varicolor* in my table (Trans. Am. Ent. Soc., xxvi, 1899, p. 148). The punctures of the elytral striæ and interspaces are scarcely more unequal than on *rudis,* but the form and facies are more nearly that of *varicolor.* From both the present species differs by its larger prothorax with sides only very feebly serrulate, and by its much longer last ventral of the male.

*Corticaria cavicauda Fall, n. sp.

Brownish piceous, shining, pubescence fine, thin and recumbent. Head three-fourths as wide as the prothorax, finely, sparsely punctate; eyes moderate, tempora one-fourth the length of the eye. Antennæ scarcely attaining the base of the thorax; joints 3-7 decreasingly longer than wide, 8 and 9 each about as long as wide, 10 a little transverse. Prothorax moderately transverse, feebly cordate, widest just before the middle; sides rather coarsely denticulate; surface convex, with a moderately deep posterior fovea; punctuation rather coarse, the punctures separated by their own diameter or a little less. Elytra oblong subovate, scarcely three-fourths longer than wide and about one-third wider than the thorax; striæ scarcely impressed, punctures of the interspaces evidently finer than those of the striæ, all becoming finer toward the apex. Beneath very finely sparsely punctate, the metasternum more strongly so. Prosternum slightly longer before the coxæ than the length of the latter; middle

coxæ separated by about one-third their own width; legs moderate, femora not distinctly incrassate.

Male. All the tibiæ bent and mucronate at tip, the hind ones only slightly so; fifth ventral with a large and deep transverse excavation with acute margins.

Female. Tibiæ straight and simple; fifth ventral a little longer than the preceding, evenly convex, apex broadly arcuato-truncate.

Length, 1.7 to 1.8 mm.

McKinley Park Station, July 9, 1924. Three examples (1 ♂, 2 ♀ ♀) taken with the preceding species from the same dried bear's skin. The male is taken as the type.

This species is most nearly allied to *prionodera*, with which it agrees nearly in size and form; it is, however, slightly stouter and more convex, of darker color, with more approximate middle coxæ and much broader and larger apical ventral fovea, which in *prionodera* is not acutely margined.

**Corticaria columbia* Fall.? McKinley Park; Fort Yukon (Kusche).

**Corticaria dentigera* Lec. Eagle; Dawson; White Horse.

Corticaria ferruginea Marsh. Anchorage; Dawson.

FAMILY COCCINELLIDÆ

Scymnus lacustris Lec. Dawson, one example, not quite typical.

Scymnus nanus Lec. Dawson; White Horse.

**Psyllobora 20-maculata* Say. Tenana River.

Nœmia episcopalis Kby. Dawson.

Hippodamia 13-punctata L. Anchorage.

Hippodamia parenthesis Say. White Horse.

Coccinella transversoguttata Fabr. Dawson.

**Coccinella 5-notata* Kby. Skagway.

Anisocalvia 12-maculata Gebl. Eagle.

FAMILY TENEBRIONIDÆ

Phellopsis porcata Lec. Juneau; Skagway.

**Scaphidema æneolum* Lec. Eagle.

Hypophlœus prætermissus Fall, n. sp.

This name is proposed for a species so closely resembling *parallelus* in size, form, color and nearly all other characters as to be easily confused with it. It differs from *parallelus* in having the anterior thoracic angles more rounded and only

feebly prominent and the sides of the prothorax more narrowly margined. In these two particulars it agrees nearly with *H. glaber*, which species is, however, materially smaller, narrower and of more southern habitat.

Several examples of the present species were taken on a telephone pole adjacent to a spruce wood pile at Dawson, Yukon Territory, June 25, one of which is taken as the type. I have what seems to be the same species from Tyngsboro, Lawrence and Framingham, Massachusetts. There is, of course, a possibility that this may be an introduced species but I have no means at hand of verifying this suspicion.

**Upis ceramboides* L. Anchorage; Dawson; Fort Yukon (Kusche).

FAMILY MELANDRYIDÆ

**Tetratoma concolor* Lec. Anchorage; Dawson.

Hallomenus punctulatus Lec. Anchorage; Dawson.

FAMILY ANOBIIDÆ

**Hadrobregmus linearis* Lec. McKinley Park; Yukon River below Selkirk, Yukon Territory; Fort Yukon (Kusche).

**Microbregma emarginatum* Duft. McKinley Park; Yukon River thirty miles above Fort Yukon on spruce wood pile.

**Cænocara scymnoides* Lec. Eagle; Skagway.

FAMILY BOSTRICHIDÆ

Stephanopachys (Dinoderus) substriatus Payk. Yukon River, Yukon Territory; also below Eagle.

FAMILY CISIDÆ

Cis biarmatus Mann. Sitka; Kasaan.

**Octotemnus denudatus* Csy. Skagway.

FAMILY SCARABÆIDÆ

Ægialia cylindrica Esch. Skagway.

Ægialia lacustris Lec. McKinley Park; Eagle. As remarked by Horn this may well be the *exarata* of Mannerheim, though that author's statement that the clypeus is emarginate hardly applies to *lacustris*.

Aphodius aleutus Esch. Entirely black form at Juneau. The form having the elytra with maculation of the *pardalis-leopardus* type was common at Anchorage. I am quite

unable to separate the eastern *leopardus* from this. Horn places them in different groups, one being assumed to have the hind tibiæ fringed with equal, the other with unequal, spinules. This is here a very illusory character. Strictly interpreted the spinules are more or less unequal in both; more liberally interpreted they are comparatively equal in both.

Aphodius pectoralis Lec. Eagle; Dawson; White Horse.

FAMILY LUCANIDÆ

Platycerus depressus Lec. Yukon River below Selkirk, Yukon Territory.

FAMILY CERAMBYCIDÆ

Asemum atrum Esch. Juneau; Skagway.

Tetropium cinnamopterum Kby. Yukon River below Eagle.

Tetropium alaskanum Fall, n. sp.

Elongate, parallel, black, elytra brownish to fuscous, legs and antennæ ferruginous; femora sometimes darker. Head finely, sparsely punctate with distinct median sulcus. Antennæ about three-fifths the length of the body in the male, shorter in the female, stout, gradually attenuated, second joint three-fourths to four-fifths as long as the third. Prothorax about one-sixth wider than long, widest and strongly rounded at or very near the middle, apex distinctly wider than the base, the former broadly sinuate, the latter truncate; disk feebly or scarcely impressed along the middle; surface polished and very finely remotely punctate, becoming more closely so at sides. Elytra about two and one-half times as long as wide, about one-sixth wider and nearly three and a half times as long as the prothorax; sides parallel, apex obtusely rounded, surface finely, densely punctate and dull, rather densely clothed with short, fine, appressed fulvo-cinereous pubescence. Body beneath shining, sparsely punctate; last ventral of male subequal in length to the preceding, its apex broadly truncate or sinuato-truncate; last ventral of female longer with evenly rounded apex. Legs short; femora robust. Length, 6.3 to 10.5 mm.; width, 1.3 to 3 mm.

The type is a male and is one of a series of specimens taken by the writer on a spruce wood pile at Sheep Creek on the Yukon River below Eagle, Alaska, July 1, 1924. The same species was taken at Dawson, Yukon Territory, and there are other Alaskan examples in my collection from Ruby (Kusche) and Kowak River (Grinnell). The specimens from the last named locality are referred to by me (Ent. News, 1900, p. 459)

as *T. cinnamopterum,* and were reported to have been "thawed out of birch wood. Notwithstanding the indicated difference in habits, the specimens are undoubtedly all of one and the same species and cannot well be referred to any of our hitherto described species, though by description evidently closely allied to *parvulum* Csy. The latter seems to have a similarly polished and sparsely punctate prothorax, which, however, is said to be as wide as the elytra, a condition not obtaining in any one of twenty examples before me. *Parvulum* moreover was described from Indiana and it is improbable that it can be the same as the Alaskan species.

**Criocephalus agrestis* Kby. Fort Yukon and Rampart (Kusche). The third joint of the hind tarsi is a little shorter than is described of typical *agrestis* but I think this is not of importance.

Leptalia macilenta Mann. Skagway; Seward.

Pachyta liturata Kby. Juneau.

**Acmæops proteus* Kby. Skagway; Yukon River from Eagle to below Fort Yukon.

**Acmæops pratensis* Laich. Eagle; Dawson; Fort Yukon (Kusche).

Leptura vexatrix Mann. Skagway; Dawson, Fort Yukon (Kusche). With a good series ranging from New England to Alaska I am not yet able satisfactorily to separate this from *sexmaculata* L., assuming our eastern specimens to be of that species.

**Leptura sanguinea* Lec. McKinley Park.

Leptura subargentata Kby. form *similis* Kby. White Horse.

**Leptura tibialis* Lec. Skagway, one female.

Merium proteus Kby. Yukon River below Eagle; Ruby (Kusche); Dawson.

Phymatodes dimidiatus Kby. Yukon River below Selkirk, Yukon Territory.

**Xylotrechus undulatus* Say. Yukon River from Selkirk to below Fort Yukon.

**Neoclytus muricatulus* Kby. Yukon River thirty miles above Fort Yukon.

Monochamus scutellaris Say. Yukon River below Eagle.

Acanthocinus obsoletus Oliv. Yukon River below Selkirk, Yukon Territory.

Pogonocherus penicellatus Lec. Yukon River below Selkirk, Yukon Territory.

FAMILY CHRYSOMELIDÆ

**Orsodachna atra* Ahr. Eagle; Nenana.

Syneta carinata Mann. Skagway.

Zeugophora atra Fall, new name. White Horse, one example. This is the black form with yellow legs and antennæ that Crotch, Horn and others have called *abnormis* Lec. The true *abnormis* is an entirely yellow form with which *kirbyi* Baly and *reinecki* Grote are synonymous. It is not yet clear whether these variously colored forms are really distinct species, so for the present the names are allowed to have specific standing; I think, however, there can be no doubt whatever of the synonomy given above.

Pachybrachys peccans Suffr. Dawson, a single female probably belongs here.

Adoxus obscurus L. Skagway.

**Adoxus obscurus* var. *villosus* Schrank *vitis* auct.). Anchorage, Yukon River.

**Entomoscelis adonidis* Pallas. Dawson; Nenana.

Lina laponica L. Skagway.

Lina sp. White Horse; Big Salmon, Yukon Territory. A small form with uniformly black-bronzed elytra, the thorax broadly margined at sides with yellow, the identity of which is not yet clear to me.

Phytodecta americana Schf. Eagle; Dawson; Yukon River below Selkirk.

Phytodecta notmani Schf. Eagle; Yukon River below Selkirk. Of two examples taken at Eagle, probably from the same poplar tree, one is *americana* and the other *notmani*. Also of my two examples taken below Selkirk one is *americana,* the other *notmani!!* Again there are in my cabinet two examples from Mount Washington summit, New Hampshire, bearing same date, one *americana,* the other *notmani*. One example, Dawson, is *americana*. These determinations are based on Schaeffe's table in Jour. N. Y. Ent. Soc., 1924, p. 140.

Phytodecta vulgatissima L. Dawson; Yukon River, Yukon Territory. These specimens seem quite identical with eastern examples of *vulgatissima* and not with the variety *interstitialis* as described by Mannerheim.

Disonycha triangularis Say. Dawson.

Haltica tombacina Mann. (= *evicta* Lec.). Skagway; Anchorage; McKinley Park; Nenana; Dawson, Yukon River, Yukon Territory. I have no hesitation in announcing the above synonym. The "*tombacina* Mann." of Horn's monograph is quite another thing and as specimens of this in the LeConte collection and perhaps elsewhere bear the unpublished name **cupreolus** Lec. I would suggest that this name be adopted for the species.

**Crepidodera (Chalcoides) fulvicornis* Fab. Fairbanks. This is the common and widely distributed species long known as *helixines* L. in our lists (see Chittenden in Jour. N. Y. Ent. Soc., June, 1925).

**Crepidodera (Hippuriphila) modeeri* L. Anchorage; Yukon River below Eagle.

**Chætocnema protensa* Lec. McKinley Park.

**Phyllotreta vittata* Fab. Nenana.

FAMILY MYLABRIDÆ (BRUCHIDÆ)

***Mylabris (Bruchus) prolixus** Fall, n. sp.

Narrowly elongate, feebly cuneiform, entirely black, finely sparsely cinereo-pubescent; head and thorax dull, elytra moderately shining. Antennæ (♂) slender, as long as the entire body, pectinate, second joint very small, third with an acutely triangular process, shorter than the joint itself; rami of following joints very slender, becoming gradually longer, those of joints 6-10 fully twice as long as the joints themselves. In the female the antennæ are stouter, attaining the apical third of the elytra, serrate from the fourth joint. Head except the clypeus densely punctate; eyes deeply emarginate, strongly prominent in the male, in which sex they are separated on the front by about three-fourths the length of the basal joint of the antennæ; in the female a little smaller and distant by about the length of the basal joint. Prothorax moderately transverse, trapezoidal, sides nearly straight and strongly convergent throughout; a feeble post-median sinuation; base with a short truncate median lobe, surface very densely punctate and dull throughout. Elytra about seven-tenths (♂) or one-half (♀) longer than wide; sides gradually and feebly divergent; striæ fine, finely punctate, all abbreviated at apex, the

fifth and sixth shortest; intervals flat, not distinctly punctate but with fine scratches and reticulations. Pygidium a little wider than long, parabolically rounded at apex, impressed each side at about the middle, finely but not very distinctly punctate. Body beneath closely punctate anteriorly, becoming more sparsely and finely so on the ventral segments. Legs very long and slender, slightly less slender in the female; the hind tibiæ in the latter sex with a very short acute mucro at tip, which is almost completely obsolete in the male; hind femora without teeth or denticles; basal joint of hind tarsi conspicuously longer than the remainder in both sexes. Dimensions: male (type), 2.2 x 1 mm.; female, 2.5 x 1.3 mm.

Described from four examples (1 ♂, 3 ♀ ♀) taken by the writer in the sweepnet near McKinley Park Station, Alaska, June 9-10, 1924.

This very remarkable species is not only notable as being the first of its family to have been reported from Alaska, but it is one of the most conspicuously distinct species in the North American fauna. By its simple femora and pectinate antennæ it must be referred to Horn's Group IV, from all the members of which it differs signally in its narrow form and the long antennæ of the male.

FAMILY CURCULIONIDÆ

***Apion alaskanum** Fall, n. sp.

Moderately robust and ventricose; black, antennæ, except the club and one or two joints preceding, front tibiæ and all the femora except at tips, yellow; body above thinly, finely cinereo-pubescent, scarcely shining; meso- and meta-sternum at sides densely clothed with appressed white hairs. Beak (♀) subequal in length to the head and thorax, rather slender, thickened in basal third, which is distinctly punctured and dull, finely sparsely punctulate and shining beyond the antennal insertion. First joint of antennæ as long as the next two, second reaching the eye. Front canaliculose; eyes prominent. Prothorax very little wider than long, sides parallel in basal half, thence oblique and nearly straight to apex; basal margin not at all expanded, surface densely, rather coarsely, punctate; median line impressed in basal third. Elytra widest at apical two-fifths, twice as wide as the thorax; humeri moderate, sides divergent and nearly straight from base to middle; interspaces flat, nearly twice as wide as the striæ at the middle, sub-biseriately punctate. Beneath rather coarsely and densely punctate. Length (excluding beak), 2.25 mm.; width, 1.2 mm.

Described from a single female specimen taken by the writer on the Yukon River, Alaska, thirty miles above Fort Yukon.

This species belongs to my group IV, and by the table is to

be placed near *segnipes,* with which it nearly agrees in the color of the antennæ and legs. The latter species differs in many respects, notably in its more conical thorax with expanded basal margin, parallel elytra, much longer beak, smaller, not prominent eyes and punctate rather than channeled front. Only one species of Apion *(cuprascens* Mann. from Sitka) has hitherto been reported from Alaska.

**Sitona tibialis* Hbst. Skagway.

Lophalophus inquinatus Mann. Skagway.

Lepidophorus lineaticollis Kby. McKinley Park; Eagle; Dawson; White Horse.

Lepyrus capucinus Schall. or possibly *errans* Csy. Fort Yukon: Nenana; Dawson.

Hyperodes maculicollis Kby. Yukon River below Fort Yukon (Arctic Circle). This is the *vitticollis (vittaticollis)* of Dietz' paper, but there can be very little doubt that the true *vitticollis* is the *ulkei* of Dietz.

Paraplinthus carinatus Boh. Ketchikan; Kasaan.

Paraplinthus scrobiculatus Mann. Ketchikan.

Dorytomus longulus Lec. Skagway.

Dorytomus rufulus Mann. Anchorage.

Grypidius equiseti Fabr. Dawson.

Notaris æthiops Fabr. Skagway; Anchorage; Yukon River below Selkirk, Yukon Territory.

Proctorus decipiens Lec. Dawson. Le Conte is in error in saying that the thighs are not toothed in *P. armatus* and that the venter is unarmed in the male of *decipiens.* In the latter the last ventral is similarly but less strongly modified, lacking, however, the small tooth at the middle of the anterior margin of the segment, present in *armatus.*

**Elleschus borealis* Carr. Dawson; Fort Yukon.

**Orchestes parvicollis* Lec. Dawson; Fort Yukon.

Acalyptus carpini Hbst. Dawson.

**Ceutorhynchus rapæ* Gyll. Nenana.

Ceutorhynchus decipiens Lec. Dawson.

Ceutorhynchus cyanipennis Germ. Dawson.

Ceutorhynchus pusio Mann. Anchorage; Dawson.

***Ceutorhynchus fulvotertius** Fall, n. sp.

Oval, piceous; apical third of elytra, legs and antennæ reddish

brown. Above thinly clothed with slender linear yellowish gray scale-like hairs, with scattered broader white scales on the elytra which show some tendency to a serial arrangement; the sides and median line of the prothorax and an elongate scutellar spot more densely scaly; beneath clothed with larger oval, more or less pointed gray scales which are densely placed anteriorly, a little sparser and more oblong in shape on the abdomen. Head densely punctured; beak slender, striate and finely punctate; antennal funicle seven-jointed, formed as in *pusio*. Prothorax wider than long, much narrowed in front, lateral tubercles small but acute, median line feebly channeled, apical margin nearly straight between the broad and very feeble angulations, disk very densely punctate throughout. Elytra one-fifth longer than wide; humeri moderate, sides more or less evidently convergent from the humeri; intervals rather wide, nearly flat, subrugose, each with a series of acute tubercles on the declivity. Legs slender, femora unarmed, claws simple. In the male the middle and hind femora are unguiculate and the last ventral segment is deeply transversely foveate; in the female the tibiæ are unarmed, the last ventral similarly but much less strongly impressed. Length (type), 2 mm.; width, 1.15 mm.

Described from a series of specimens of very uniform size, taken at Nenana, Alaska, July 6, 1924, and a single specimen from Fort Yukon, July 2. The type is a male from Nenana.

This species greatly resembles *pusio* Mann., which occurred plentifully at Anchorage. In the latter the claws have a very small basal tooth (which may easily be overlooked), the scales of the elytra are more or less aggregated in small spots, giving a mottled aspect. *Fulvotertius* must be referred to the *squamatus* group of Dietz, and by its characters seems to fall next to *squamatus*, which, however, it does not much resemble.

Pelenomus gracilipes Dtz. Dawson.

FAMILY SCOLYTIDÆ

Polygraphus rufipennis Kby. Dawson; McKinley Park.

Dendroctonus borealis Hopk. Dawson; Yukon River below Eagle (Sheep Creek); Anchorage.

Hylurgops rugipennis Mann. Ketchikan. I cannot see any difference between this and many eastern *pinifex*.

Hylastes nigrinus Skagway.

Hylastes yukonis Fall, n. sp.

Strikingly similar in size, form and general appearance to *H. nigrinus*, from which it seems to differ constantly in its somewhat less coarse sculpture both above and beneath. In *nigrinus* the punc-

tures of the discal striæ of the elytra are notably coarse, the intervals not appreciably wider than the striæ. In the present species the strial punctures are evidently smaller, the intervals between the striæ always distinctly wider than the punctures themselves. The sides of the prothorax are slightly more rounded than in ***nigrinus,*** and the rostral carina is always sharply defined and entire. In my series of ***nigrinus*** the rostral carina is never so well developed as in ***yukonis*** and not infrequently is nearly or quite obsolete except for the short distance where it crosses the apical convexity. Length, 4.3 to 5.6 mm.; width, 1.55 to 1.85 mm. Dimensions of type, 1.7 x 4.6 mm.; of prothorax, 1.5 x 1.3 mm.

Described from six examples taken in flight at White Horse (June 21, 1924), and Dawson (June 24, 1924), Yukon Territory. The type is a male from White Horse.

In the male the last ventral is apically concave and furnished with a brush of yellowish erect hairs as in the allied species. Notwithstanding the rugose sculpture the integuments of the upper surface are polished and shining throughout, without trace of alutaceous sculpture. *Nigrinus* is a little duller though not visibly alutaceous; the nearly allied *macer,* on the other hand, has the surface between the punctures distinctly alutaceous.

A pair of the present species was submitted to Dr. J. M. Swaine, who pronounced them a new species most nearly allied to *nigrinus.*

Pityophthorus nitidulus Mann. Seward.

**Pityophthorus borealis* Swn. Fort Yukon; Dawson. My thanks are due to Dr. J. M. Swaine for determining this species; he writes that the specimen sent him is perfectly typical. It is described from the Coppermine River, Arctic Canada (Can. Ent., 1924, p. 195).

Pityogenes carinulatus Lec. White Horse.

Ips perturbatus Eich. Yukon River below Eagle; White Horse; Dawson. Doctor Swaine has kindly verified my determination of this species.

Ips interruptus Mann. ? Anchorage.

Orthotomicus vicinus Lec. Yukon River thirty miles above Fort Yukon; Dawson.

Dryocœtes septentrionis Mann. Fairbanks; Seward; Anchorage; Yukon and Tenana rivers.

Dryocœtes affaber Mann. Dawson; Yukon River below Selkirk, Yukon Territory.

NOTES ON GRIBURIUS MONTEZUMA (SUFFRIAN) (COLEOPTERA-CHRYSOMELIDÆ)

BY R. H. BEAMER
Department of Entomology, University of Kansas, Lawrence

The University of Kansas Biological Survey party on July 5, 1923, accompanied by Mr. Warren Knaus of McPherson, Kansas, visited the salt-marshes and surrounding hills in Kiowa County, Kansas. On the roof of a cave in a rocky bluff a large series of *Griburius montezuma* (Suffrian) was taken. The cave extended back into the cliff perhaps eight feet, and was two feet in diameter at the smallest place. Quite a large number of sticks and much débris was piled up at the farther end, upon which were two young buzzards. The stench which accompanies a buzzard's nest was not lacking. The specimens of Griburius were found mating in large numbers on the roof of this cave. Some were also observed flying in and out.

A small den with two openings and a stick nest at the back of it was also a favorite place with the beetles. This second place was perhaps ten feet from the first, along the same cliff. As this particular species was considered a good find by Mr. Knaus, a good deal of interest was taken in the actions of the individuals and their seeming preference of location. We then searched all the caves, shady cliffs, crevices, and all other places in that immediate vicinity, but not a single specimen could we find. On July 12, 1923, however, in Ellsworth County, Kansas, perhaps seventy-five miles north and fifty miles east of the first locality, another buzzard's nest cave was found and here four more specimens of this same species were taken. This called forth a further search of all the caves in the vicinity, but no more specimens were found.

In the rather hasty examination of the débris about the nests no larval cases or other indications of the insect's life history were found at the time of our first visit. This preference, however, for a very definite location for mating and the knowledge that some closely related forms are scavengers in ants' nests led us to suspect that this beetle did pass its early stages in the

refuse of rodent or buzzard nests. It was with a great deal of interest, therefore, that we made our second visit to these same caves in Kiowa County, Kansas, on April 12, 1925. We were rewarded by finding both the living larvæ in their cases and the old cast-skins of previous generations.

The sandstone in which the caves occur is friable and the walls about the entrance have been honeycombed in the process of erosion. It was in these small holes and under stones at the mouth of the caves that the larval cases were found. About three dozen cases were collected. The beetles emerged in due time, but the attempt to obtain the life history failed, for the specimens all died before laying eggs, although two pairs were observed to mate in captivity. The evidence is conclusive that they overwinter as larvæ, and is suggestive of but one generation a year. Thanks are due to Mr. H. C. Fall of Tyngsboro, Massachusetts, for identification of the species.

A Luminous Zarhipis (Coleoptera)

On April 3, 1926, an adult male of *Zarhipis riversi* Horn (?) was examined with a view to finding out whether or not it possessed the power of luminosity. The insect was taken into a dark room and, when excited by shaking and moving about, was observed to be distinctly luminous. So far as could be determined in the dark this luminosity involved the posterior and lateral borders of the first, second and third abdominal segments dorsally, and the sides, apparently just back of the spiracles, of the remaining segments. The light was greenish yellow and, though faint, could be seen at a distance of about two feet. The insect seems to have at least partial control over this power, as it was luminous only when disturbed and then shone steadily for some time. Later in the day the insect failed to show any light, no matter how much it was agitated.

Another male taken on May 3 refused to become luminous at first, but after several trials over a period of about four hours it shone very feebly for a short time. The females of this genus are distinctly luminous and apparently do not have any control over the light, as they glow steadily.—A. C. Davis.

A BUTTERFLY MIGRATION

BY E. O. ESSIG

A true migration of the thistle butterfly, *Vanessa cardui* (Linn.), occurred in California from the middle to the last of March, 1926. Large numbers were first noticed in southern California about March 10. They were rapidly traveling north and entered the southern end of the San Joaquin Valley on the 12th and 14th. On the 17th they were in the Sacramento Valley, and a portion of the flock passed through Berkeley on the 23rd, 24th and 25th. In the latter place all were traveling due north. In the orchard districts the butterflies were attracted to the opening blossoms of almonds, apricots, cherries, plums, prunes and pears, all of which had an unusually heavy bloom this year. Many of the farmers were greatly annoyed by their presence. In the interior valleys the butterflies were hovering over the plants commonly called "woolly breeches" (*Amsinckia* spp.), which is a favorite food plant of the caterpillars in the West.

A full explanation of the periodic migrations of this and a closely related species, *Vanessa carye* (Hübner), has not yet been made, but they are somehow connected with years having mild, dry winters. Temperature is undoubtedly an important factor, and the continued hot weather during the month of March in California, Arizona, and northern Mexico may have started the species north.

These migrations are always toward the coast or in a northerly direction, and no return migrations have been noted. Many of the butterflies were captured, and their badly battered wings gave evidence of a long flight. They move rapidly and often cover from 100 to 200 miles per day. They rest at night and the maximum flight occurs from 2 to 3 p. m. on bright, hot days. On cold days the forward movements cease, so that the limits of the flights are probably also determined by temperature.

NOTE BY THE EDITOR—Mr. W. S. Wright of the San Diego Museum of Natural History writes me that this migration was observed throughout southern California from Yuma to San Diego, beginning March 13, the general direction of the flight being from southwest to northeast, and the "peak" of the flight lasting about 40 minutes.

The butterflies were seen feeding at Encelia flowers. Mr. Wright noticed that the flight followed two days of strong wind from off the desert, and suggests that probably the butterflies were blown from the desert toward the west until they came into contact with the cool air from the ocean and were then deflected toward the northeast. Mr. Wright noted that the flight of two years ago was also preceded by a strong wind from off the desert.

A NEW NOMADA

BY C. L. FOX
San Francisco, California

Nomada (Gnathias) klamathensis, C. L. Fox, n. sp.

Aspect of a black and yellow *Heminomada,* but with the bidentate mandibles of a *Gnathias.* Length, 8 mm.

Male. Robust. Face broad; orbits slightly converging below. Scape swollen; joint three of flagellum equal to four. Pubescence on head and thorax white, sparse, longer on sides and underneath. Punctures on head and thorax dense, coarser on vertex. Mesoscutellum low, feebly and broadly sub-bilobate. Abdomen short and broad; apical plate narrowed, notched. Wings almost clear, slightly darkened apically; nervures and stigma light ferruginous; second submarginal cell narrowed above, three-quarters of width below, receiving first recurrent nervure far beyond the middle; third submarginal cell much narrowed above; basal nervure well basad of transverso-medial nervure.

Color black with the following yellow maculations: mandibles except apices; labrum; clypeus except emarginated medial upper part; lateral face marks, broad-triangular below, upper portion narrow, not quite reaching antennal basal line; scape in front; posterior dorsal border of prothorax, interrupted medially; conspicuous spot on lower anterior part of mesopleura; large, nearly coalesced spots, on lobes of mesoscutellum; tubercles except somewhat anteriorly; tegulæ; anterior and intermediate femora in front and apex behind; posterior femora with apical front and hind part only; tibiæ and tarsi except black stripe behind on posterior metatarsi; broad bands on tergites 1-6, that on tergite 1 interrupted medially; broad band on sternite 2 (possibly on the others if uncontracted) and greater part of the ultimate sternite. Flagellum light red-brown, joints 1-3 blackened behind; apical margins of tergites and sternites somewhat dark ferruginous, lighter on posterior ones. Described from one male.

Type, male, No. 1877, Mus. Calif. Acad. Sci. Collected by myself at **Klamath Falls, Oregon,** May 12, 1924.

CONTROLLING MEALYBUGS ON ORNAMENTAL PLANTS

BY R. W. DOANE
Stanford University

During the past few years the common mealybug, *Pseudococcus gahani,* has been becoming more and more abundant and destructive on the ornamental plants on the Stanford Campus. Efforts were made to control it with the usual spraying materials, such as some of the miscible oils, Blackleaf 40, and soap solutions, but none of these seemed to do the work satisfactorily. It seemed almost impossible to get the oils to penetrate the cottony secretion that often covered the masses of these insects when they were abundant on any particular plant, and even when the insects could be hit individually with the spray, they were not always killed. The same factors seemed to keep the nicotine from giving a good killing. It was found that the soap mixtures would dissolve this mealy covering but that they would only kill a part of the insects.

After a series of experiments in which these different sprays, used singly and in combination, were tried out, we finally hit upon a combination which has given us very satisfactory results here on the campus. I have not had an opportunity to make any extensive tests to determine the most economical combination of these materials, but as soon as I found a combination that would do the work I began using that as I was more concerned in getting results than in keeping down the cost. It is quite possible that less nicotine or less soap might be used with equally good results. The combination that I now use is as follows:

1 gallon Volk Oil, formerly known as "orange oil."
7½ lbs. Gold Dust Washing Powder.
½ pint Nicotine (Blackleaf 40).
50 gallons Water.

It seems that the efficacy of this combination depends upon the fact that the soap solution will cut the secretions which are covering the insects and the nicotine will then be able to reach and destroy the insects, and the oil helps to make the material penetrating. It has been used successfully on many kinds of

ornamental plants, particularly Choisya, Oregon Grape and Pittosporum. In cases of very bad infestations we have sometimes found it necessary to make a second application before the plants were thoroughly cleaned. One application on a badly infested lemon tree gave very good results.

Some of the large Araucaria on the campus were very badly infested with the golden mealybug, *Pseudococcus aurilanatus*. At a time when many of the young mealybugs were wandering over the leaves these trees were thoroughly sprayed with this same material, using a spray-gun with a pressure of 250 to 300 pounds. This greatly improved the appearance of the trees and killed most of the mealybugs, but another treatment was necessary some weeks later as it was found that all of the insects had not been reached at the time of the first spraying.

One of the great advantages of using this spray is that it removes from the tree the sooty mold that grows in the secretion of the mealybugs. This, of course, makes the trees much brighter and cleaner.

AN ENTOMOLOGICAL CODE

The Entomological Society of London has sent out a suggested entomological code compiled by the British National Committee on Entomological Nomenclature. The adoption of such a code, especially if approved by the International Committee on Zoological Nomenclature, would be a great help toward unifying the nomenclature of our science.

Most of the thirty articles in the proposed code will doubtless meet with the hearty approval of American entomologists, but one or two might with advantage be slightly modified. Article 14, for instance, provides that names of a lower rank than that of a subspecies shall have no status in nomenclature. The term "variety" is not even mentioned in this code, but it has been, and still is, largely used by certain entomologists, and we are left in doubt as to its standing under the proposed code. Frequently it is used in the sense of subspecies and in any case cannot be ignored. For many years such names must be

given subspecific rank or our nomenclature would soon be in a condition of chaos.

Article 20 provides that the law of priority obtains when any stage in the life history of an insect is named before the adult, a provision that opens the road to abuses that might easily prove intolerable. Article 23 provides that if a genus is established without the mention of a species the first reviser has the right to select any species as the type, provided it agrees with the original definition of the genus. Most American students would accept this but would credit the genus to such reviser, a procedure not mentioned but probably intended by this code. So long as we employ genotypes for the final delimitation of our genera, it is illogical to accept any generic concept that contains no species that can be used as its type. If we are to accept genera on their *described characters alone,* the naming of a genotype is a superfluity, and that way lies chaos. With such a rule there would be nothing to prevent any adventurer from naming up a series of genera by assembling imaginary characters and awaiting the discovery of some insect that would fit into his concept. The correct naming of genotypes is probably the most perplexing problem in nomenclature. There are cases such as Myodocha Latr. where it is quite impossible to name a genotype without violating some rule of our zoological codes. In such cases we must use common sense and possibly depend upon later validation by some authoritative committee.

The constant splitting up of genera is a form of amusement quite popular with a certain class of our entomologists. In many cases these minute subdivisions, of both genera and species, are but minor offshoots in a still plastic complex, that soon will become extinct in the natural course of evolution, but for the present they may be treated as subgenera or subspecies, and thus serve a useful purpose in classification and at the same time be ignored by the worker in economic entomology. It is conceivable that to the student of evolution a few hundred years hence the description of such minute subdivisions may prove of the greatest value, while to us they are but a weariness. It is for us to select what we wish to use and leave the rest to posterity.—E. P. Van Duzee.

THE PAN-PACIFIC ENTOMOLOGIST
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E. P. Van Duzee, Editor F. E. Blaisdell, M. D., Treasurer

The present number of the *Pan-Pacific Entomologist* closes its second volume. The subscription list has shown a steady growth during the year, and the third volume will start under much improved conditions financially. For the completion of this volume there was still a considerable deficit to be made up. Members of the Pacific Coast Entomological Society have contributed a part of the necessary funds, but the bulk of the deficit was covered by a very generous check received from Mr. B. Preston Clark and an emergency appropriation from the funds of the Department of Entomology of the California Academy of Science. Twenty-four extra pages, issued with Vol. II, to cover two papers of unusual length, were paid for by the authors and other friends of the journal. The numbers of this volume have been mailed as follows: No. 1, August 27, 1925; No. 2, January 16, 1926; No. 3, May 8, 1926; and No. 4, July 14, 1926.

Among recent visitors at the entomological department of the California Academy of Science may be mentioned Mr. M. C. Van Duzee of Buffalo, New York; Dr. Carl J. Drake of the Iowa Agricultural College; Mr. P. H. Timberlake of the Citrus Experiment Station at Riverside, California; Mr. Otto Swezey of the Hawaii Sugar Planters' Association; Mr. G. M. List of the Colorado Agricultural College; and Prof. T. D. A. Cockerell of the University of Colorado. Mr. Van Duzee spent several weeks working over certain families of the Diptera in the Academy collection that were in need of revision; Doctor Drake studied our Tingids, Anthocorids and Gerrids, and Mr. List our Cimicids.

Dr. and Mrs. E. C. Van Dyke left June 3 for two months' collecting in the mountains of Colorado. Mr. C. L. Fox has gone to England for a visit at his former home at Plymouth, returning in October. He will do some collecting for the Academy of Science while there.

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